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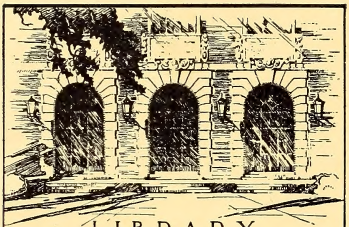

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THE THIRD BIENNIAL REPORT

OF THE

DIRECTORS AND OFFICERS

OF THE

MINNESOTA INSTITUTE

FOR THE

DEAF AND DUMB, AND THE BLIND:

AND THE

SCHOOL FOR IDIOTS AND IMBECILES,

LOCATED IN FARIBAULT.

TO THE GOVERNOR OF MINNESOTA,

For the Two Years Ending July 31, 1884.

TRANSMITTED TO THE LEGISLATURE OF THE TWENTY-FOURTH SESSION,
BEING THE THIRD BIENNIAL SESSION, 1885.

ST. PAUL, MINN.:
THE PIONEER PRESS COMPANY.
1884.

FARIBAULT, November 17, 1884.

To His Excellency, Lucius F. Hubbard, Governor of Minnesota:

I have the honor of presenting you herewith the third biennial report of the Minnesota Institute for the education of the Deaf and Dumb, the Blind, and the Imbecile.

R. A. MOTT, Secretary.

BOARD OF DIRECTORS.

1883–4.

HIS EXCELLENCY, L. F. HUBBARD,
Governor of Minnesota, *ex-officio.*

HON. D. L. KIEHLE,
Superintendent of Public Instruction, *ex-officio.*

GEORGE B. WHIPPLE, of Faribault,
1882 to 1887.

R. A. MOTT, of Faribault,
1863 to 1866; 1868 to 1888.

HUDSON WILSON, of Faribault,
1866 to 1889.

T. B. CLEMENT, of Faribault,
1875 to 1885.

GEORGE E. SKINNER, of St. Paul,
1876 to 1886.

OFFICERS OF THE BOARD.

PRESIDENT,
T. B. CLEMENT.

VICE-PRESIDENT,
GEORGE B. WHIPPLE.

SECRETARY,
R. A. MOTT.

TREASURER,
HUDSON WILSON.

STEWARD,
H. E. BARRON.

DIRECTORS' REPORT.

To His Excellency, Governor L. F. Hubbard:

The Directors of the Minnesota Institute for the Deaf and Dumb and Blind, and for the Feeble Minded, beg leave to report:

That nothing has occurred since the date of our last report to abate the general interest manifested in our several schools, or lessen the confidence which the public have seemed to repose in the wisdom and beneficence of their organization and conduct.

We notice with regret that the public institutions of some of our sister States have suffered severely from alleged sectarian, political and partisan jealousies and strictures, from which evils we have happily escaped, and we have been left free to work out the objects of our organization which we conceive to be:

First. The establishment of pleasant homes for our defective children, in which they may be trained in manners and morals, well fed and housed, carefully nursed in sickness, and treated with kindness and affection.

Second. That they shall receive the best approved intellectual instruction adapted to their condition.

Third. That they shall be so trained in some manual work that when they leave us they may become useful and independent citizens.

Keeping these objects ever in view, your directors seek the golden mean between extravagance on the one hand, and a blighting parsimony on the other. The people to whom these schools belong and whose servants we are, and whose heart is always true on questions of organized charity will wisely decide how nearly we have traveled to the true line.

Among the pleasant events connected with our history during the past year, was the meeting of the Fifth Quadrennial Conference of Principals and Superintendents of Schools for the Deaf in the United States and Canada at this place in July last. It was a notable gathering of men and women experienced in the work, and whose names stand high in the roll of public benefactors, and our State may feel honored at their choice of a place of meeting. It has become the custom for the institution thus honored by the session, to take in charge the publication of the proceedings of such conference, and, in compliance with such custom, we herewith transmit a report thereof.

Our children have provided a display of handiwork for the New Orleans Cotton Exposition to which we ask the attention of any of our visiting citizens.

The question of further and full relief for the idiotic and epileptic children of the State gives us much embarrassment. The applications continue largely to exceed our accommodations, and a more complete segregation of the custodials, from the merely weak-minded is by our experience more sternly demanded.

Taking it for granted that our citizens are to be humanely relieved at the public cost, of these pitiable sufferers, three considerations favor the plan of bringing them together into an institution like ours, rather than to provide for them in the almshouses of the State.

First. It is more economical.

Second. They will receive better care under the supervision of trained attendants and teachers than is possible at poor-houses.

Third. Under systematic training and medical care, experience has proved that a fair percentage of young epileptics recover their health and consequently their intellectual powers, and that many of the idiotic develop into self-sustaining adults with moderate intellect. If this work is to be done by us, additional buildings must be speedily provided, and we ask an appropriation sufficient for the erection of two buildings for such custodials; $25,000 for the year 1885, and $25,000 for the year 1886.

Our wooden shop was consumed by fire last year, and the deaf and dumb, tailor, boot and shoe shops, have been kept up in the dark basements of the south wing and the main building. We ask an appropriation of $10,000 for the erection of new shops for the deaf and dumb department.

The appropriation of $60,000 made by the last legislature has been used as directed.

On the 7th day of May, 1883, we awarded the contract for erecting and finishing a main center to the buildings for the blind, to L. Ruggles and E. S. Palmer for $28,500. The building is four stories high, including basement, with mansard roof and tower of red pressed brick, roofed with slate and iron, and floored with Georgia pine. The result is a beautiful, commodious edifice, well built, and will afford ample room for the school for years to come. The contract for heating was let to the Haxton Steam Heating Co., of Illinois. The entire expense of these contracts; the bills of architect and superintendent, plumbing, cost of boiler house, coal cellars, piping, sewerage and furnishing, foots up complete, $36,578.31.

April 21, 1884, we awarded to A. H. Hatch the contract for an addition to the imbecile school building, of equal ground dimensions with the main part, 45x80 feet, but one story less in height, built of stone, roofed with iron, and finished in the style of the first building, for the sum of $15,771. The remainder of the appropriation will be sufficient to fully meet the expense of heating, superintending and furnishing. The heating of this building was also awarded to the Haxton Steam Heating Co. We commend all of the contractors on these several jobs, for honest and faithful performance of their work. The work in all of its details has been under the diligent and competent superintendence of the Hon. H. E. Barron, and has given great satisfaction to the board.

In July, 1883, we contracted with J. T. Cowles, of Chicago, Illinois, for four fire-escapes for the Deaf and Dumb and two at the Imbecile, for $859.50, which were immediately supplied, and approved as required by law. The Blind building is provided with outside iron stairs, which were included in the builders' contract.

On the seventh day of November, 1883, we closed a contract with the Faribault Water Works Company for two hydrants for fire protection at the Deaf and Dumb buildings, and one each for the Blind and Imbecile buildings, in all four hydrants, with constant water supply therefor, and for any and all stand pipes in the buildings, for the sum of $340 per annum; also water service for domestic use for the three schools, at fifteen cents per 1,000 gallons.

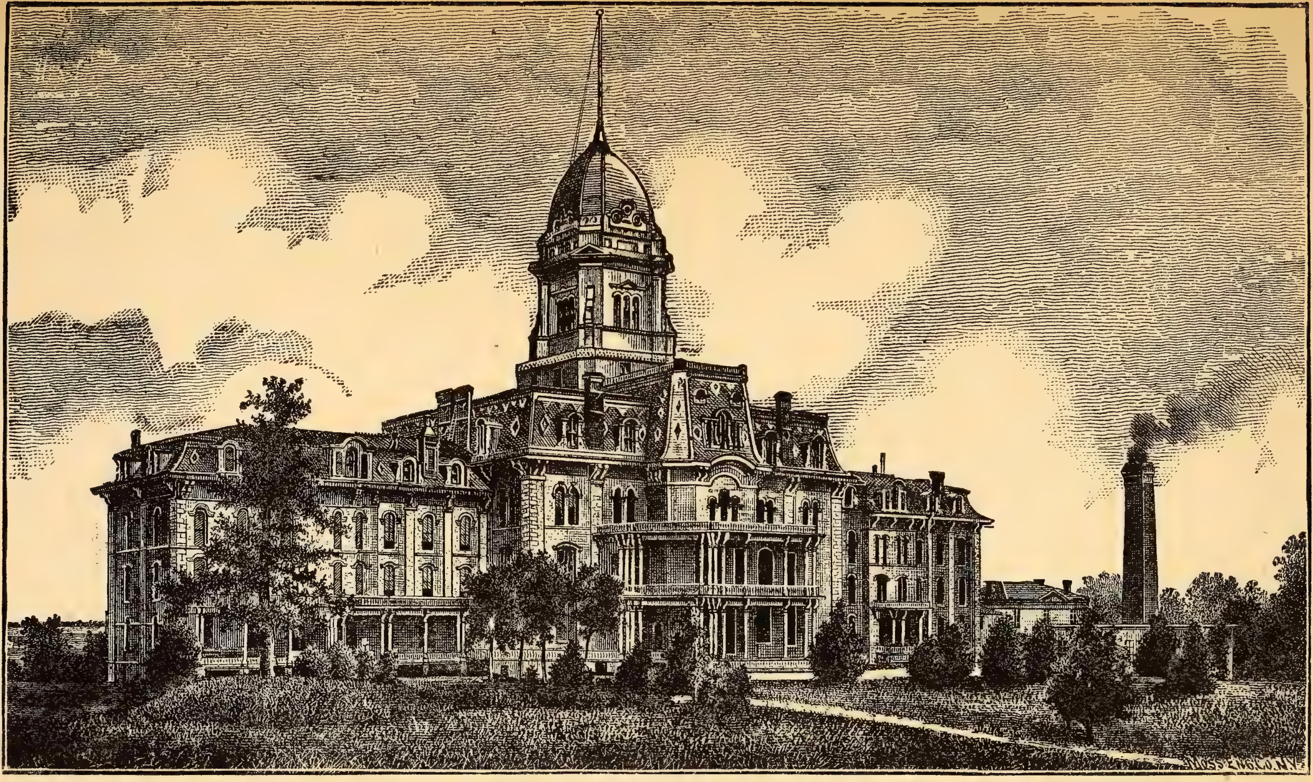
As will be seen from the treasurer's report, we again carry forward our unexpended balance in both the building fund and current expense. The competence, faithfulness and diligence of the several superintendents and their subordinates, and their cordial and harmonious co-operation in every department of our work, deserves here to be emphatically recorded.

We also desire to acknowledge with thanks the courteous attention and assistance rendered to the Institute in its several departments by the State Board of Charities, the State Board of Health, the Lunacy Commission and every department of the State government.

Calling your attention to the accompanying papers, this report is respectfully submitted on behalf of the Board.

T. B. Clement, President.

R. A. Mott, Secretary.


MOSS ENG. CO. N.Y.

MINNESOTA SCHOOL FOR THE DEAF, FARIBAULT.

REPORT OF THE SUPERINTENDENT

OF

THE SCHOOL FOR THE DEAF.

1882—1884.

MINNESOTA SCHOOL FOR THE DEAF.

INTELLECTUAL DEPARTMENT.

OFFICERS AND TEACHERS.

For 1883.	For 1884.
SUPERINTENDENT.	
J. L. NOYES, A. M.	
TEACHERS.	
GEORGE WING.	GEORGE WING.
LOUIS C. TUCK.	LOUIS C. TUCK.
KATE E. BARRY.	JEREMIAH P. KELLY.
ANNA J. WICHTOM.	ANNA J. WICHTOM.
ELLEN M. FRANKLIN.	ELLEN M. FRANKLIN.
WILLIAM KI BARR.	WILLIAM KI BARR.
	ABBEY E. AXTELL.
TEACHER OF ARTICULATION.	
FANNY WOOD.	ETTA P. McWHORTER.
TEACHER OF DRAWING.	
ANNA J. WICHTOM.	ANNA J. WICHTOM.
TUTOR.	
OLOF NORLING.	OLOF NORLING.

DOMESTIC AND INDUSTRIAL DEPARTMENTS.

	For 1883.	For 1884.
SUPERINTENDENT.	J. L. NOYES.	J. L. NOYES.
MATRON.	ADELINE R. HALE.	ADELINE R. HALE.
PHYSICIAN.	P. G. DENNINGER, M. D.	P. G. DENNINGER, M. D.
FOREMAN OF TAILOR SHOP.	D. F. MUNRO	D. F. MUNRO.
FOREMAN OF SHOE SHOP.	J. R. SENDNER.	CHARLES SUESS.
FOREMAN OF PRINTING OFFICE.	W. KI BARR.	W. KI BARR.
EDITOR OF THE MUTE'S COMPANION.	GEORGE WING.	GEORGE WING.
FOREMAN OF THE COOPER SHOP.	OLOF NORLING.	J. FRED SHANISEY.
MISTRESS OF THE SEWING ROOM.	BELLE A. HUNTINGTON	SOPHIE M. BLAIKIE.
ENGINEER.	A. B. IRVINE.	A. B. IRVINE.

REPORT

OF THE

SUPERINTENDENT OF SCHOOL FOR THE DEAF.

To the Honorable Board of Directors:

In presenting to you the Third Biennial Report, allow me to remind you that it covers two annual sessions, the *twenty-first* and the *twenty-second* in the history of this school. The previous biennial Reports have each covered portions of three school years, and in some particulars may have conveyed erroneous impressions in regard to the attendance and the time spent in school.

During the school year closing June 12, 1883, there were in attendance 127 pupils,—of these sixty-nine were males and fifty-eight females. During the same year thirty-two new pupils were admitted and one readmitted, and four were honorably discharged.

During the school year ending June 10, 1884, one hundred and thirty (130) pupils were in attendance, sixty-nine (69) males and sixty-one (61) females. During this year twenty (20) new pupils were received, one readmitted, and eleven honorably discharged.

HEALTH.

Excellent health has prevailed during the two years past. There has been no prevailing sickness in the school at any time. Two cases of fractured, or broken limbs, occurred among the boys, which were promptly set by the attending physician, and no detriment was experienced in either case, save a short absence from regular duties.

The pupils are employed nine hours daily, and yet the close confinement and tax upon mind and body do not seriously interfere with the best conditions of health. As a rule, the health of the pupils improves while at school; but, as the attendance increases and the rooms become crowded, more attention must be paid to the conditions of health. Regular habits of study, labor, recreation and rest, with a wholesome and nutritious diet, and the prompt and faithful attention of nurse and physician have, with the blessing of God, produced excellent results heretofore.

ADMISSIONS.

The fifty-two new pupils received during the last two years came from twenty-eight different counties, as follows: Sixteen counties are represented by one pupil each, eight counties by two pupils each, two by three pupils each, Ramsey county by five pupils, and Hennepin by nine. In a few cases the county authorities have very properly aided pupils by providing clothes and paying traveling expenses. Without this aid they would not have entered school at all, and these unfortunates would have lost the benefits of an education, notwithstanding the generous provision made for them here by the State. If some uniform method could be devised, or law enacted, by which indigent parents and county authorities could be helped and guided in such cases, it would be a wise and beneficent provision. This should be under the supervision of the county authorities, for they can readily determine the condition of the residents of their respective counties.

The deaf-mute population of the State is now so large, the education of the ignorant deaf children so important, so many of them are neglected entirely, or till they are too old, the difficulty of reaching some so great, and the causes of neglect so general, that a law concerning such would prove highly beneficial to both county and State. Such has been the case in neighboring States, and I respectfully recommend that the legislature be asked to make such provision in this State. When properly understood the various counties will find such provision to work for the good of the citizens at large.

GRADUATES.

During the two years under review, nine students have graduated and six have been honorably discharged. Two of the former have entered the National Deaf-Mute College in Washington, to pursue a more extended course of study. Those discharged, although not so far advanced in their studies, were equally as well up in their trades, if not better, and find ready access to places of remunerative labor and usefulness. All are doing well, giving the most convincing evidence that the bounty of the State has not been bestowed upon them in vain. It is worthy of note that not one of the graduates, or those honorably discharged, has been known to make merchandise of his infirmity, or beg for a living.

The recent graduates were all able to give substantial evidence of well disciplined minds and skillful hands. Those from the printing office wrote their own essays, and printed copies for distribution. The young ladies cut and made their own graduation dresses, even the lace with which they were trimmed was their own hand work, and those from other shops produced similar results.

The industrial part of their education comes to the front when they go into the world, and it is becoming more and more evident to discriminating men that the true theory of popular education is to train the hand as well as cultivate the mind. It has been well said: "He who hath a trade hath an estate. He that hath a calling hath an office of profit and honor."

CHANGES.

At the close of the school year, in June, 1883, Miss Fanny Wood, teacher of articulation, and Miss Kate E. Barry, accepted positions in the Pennsylvania Institution for the Deaf and Dumb. They were both efficient teachers.

At the close of the year, in June, 1884, Mr. W. KiBarr, after two years' service as primary teacher and foreman of the printing office, declined a re-appointment. These vacacies have been filled by Miss Ella P. McWhorter, as teacher of articulation;

Miss Abby E. Axtell, teacher of a sign class. Both of these ladies have shown commendable zeal and fidelity in their work, and with experience will become valuable teachers of the deaf. Mr. J. P. Kelly, one of our former pupils and a graduate of the National Deaf-Mute College, Washington, D. C., has been placed in charge of one of the sign classes, and has been doing good work. Mr. John C. Watson, of Belleville, Ont., recently a teacher of the deaf in Austin, Texas, has been appointed teacher and foreman of the printing office in place of Mr. Barr. He has made a good beginning, and, having been acquainted with deaf children for years, he understands their peculiar language and their condition.

Changes, such as have been indicated, are not desirable, but they are unavoidable and are in no way peculiar to this school. Older and larger schools sometimes offer inducements in the way of compensation, special work and local advantages which we cannot present. Most persons who enter upon this work make it their life calling, and it is very desirable they should, but to retain them in the service sufficient salary must be given to enable them to live and save something for sickness and old age. As a reward for long and faithful service, the authorities of some of the older institutions have granted an annuity upon retiring. Such recognition of fidelity is highly honorable to both parties. and stimulating to those in the service.

SCHOOL WORK.

As you are aware, our school work proper is confined to the forenoon from 8 A. M. to 12:30 P. M. During this time, the school of one hundred and thirty pupils is divided into eight classes, averaging a little over sixteen pupils to a class.

Thirty-five in all have been taught more or less the principles and practice of articulation and lip-reading. The success here has been various. Some articulate better than they read the lips, while others read the lips better than they can articulate. The only true criterion by which to be guided here, is practice and experience. Thirty-five is by far too large a number for only one teacher, and at an early day an additional teacher will be necessary. There should be very little delay in employing such a teacher, for this is a subject of special interest to our patrons, and so far as is practicable, it is our bounden duty to provide the means of developing speech and lip-reading in our pupils. Some advocate special schools of Articulation, apart from the sign classes, in order to obtain the best results, but it is confidently believed that the combined method which we have adopted, can show as good articulators as the pure oral schools, and in addition by the use of signs, the minds of the backward and naturally dull ones have been aroused, and results obtained in their cases, which never could have been reached, by the pure oral method.

The course of instruction in the sign classes is substantially the same as has been set forth at length in former reports. The annual examinations showed good results in all the classes. But here, as in other things, tact and experience in teachers, are of special value. As a rule, the pupils have been studious, dutiful, punctual, industrious, and orderly, and the habits thus formed will be invaluable to them in after life.

NATIONALITY OF PUPILS ADMITTED DURING 1883 AND 1884.

Americans	15
Norwegians	12
Germans	9
Canadians	3
Swedes	3
English	2
Irish	2
Dane	2
Bohemian	1
African	1
French	1
Scotch	1
	52

CAUSES OF DEAFNESS.

Congenital	14
Cerebro Spinal Meningitis	9
Scarlet Fever	11
Spasms, or Convulsions	3
Measles	3
Brain Fever	4
Accidents	2
Nervous Fever	1
Scald Head	1
Sores in Head	1
Scrofula	1
Catarrh	1
Typhoid Fever	1
	52

AGE WHEN DEAFNESS OCCURRED.

Under one year	20
Between one and two years	14
Between two and three years	5
Between three and four years	1
Between four and five years	1
Between five and six years	1
Between six and seven years	2
Between seven and eight years	1
Between eight and nine years	3
Between nine and ten years	2
Between eleven and twelve years	1
Between twelve and thirteen years	1
	52

YEARS IN ATTENDANCE OF ALL PUPILS DISCHARGED TO JUNE, 1884.

	Pupils.
In attendance one year	26
In attendance two years	9
In attendance three years	6
In attendance four years	6
In attendance five years	10
In attendance six years	5
In attendance seven years	62
In attendance eight years	27
In attendance nine years	6
In attendance eleven years	1
Average attendance	5.57

CONVENTION OF ARTICULATION TEACHERS.

On the 25th of last June, 115 teachers of articulation, representing thirty-eight different schools, assembled in convention in the New York Institution for the Improved Instruction of Deaf Mutes, in New York city, and spent nearly four days in comparing progress, views, and discussing plans and methods of teaching speech and lip-reading to the deaf. It was an occasion of great interest, and one well calculated to give new zeal and clearer light concerning this department of instruction. While I could not fully agree with all that was said concerning the utility and extent to which articulation may properly be carried, yet much of real value was said; and to a portion of the deaf, probably not over one-third, this system of instruction is of great value, and deserves greater attention in our own school. We have some very good articulators, but with a larger teaching force more satisfactory work can be done and better results attained than heretofore.

THE FIFTH CONFERENCE

Of Principals and Superintendents of Schools for the Deaf in the United States and Canada, convened, agreeable to your invitation, last July 9th in Faribault, and spent four days in considering the best interests of the deaf and dumb, the management of institutions, methods of instruction, manner of support, discipline, industries, and other kindred subjects. The time was fully occupied and the papers, speeches and debates were of more than ordinary interest, and should be published for general distribution. It was a gathering of uncommon interest in Minnesota, and the influence of such able, earnest and experienced men and women in council, from all parts of the Union, will be felt for years to come and will make an interesting epoch in our history. The evidence of this influence on other schools as well as our own, appears from time to time, and we have occasion to rejoice that the Conference met here in Faribault, and gave our teachers and our citizens an occasion of much interest and profit.

And still again, July 15th, in the National Teachers' Association, at Madison, Wisconsin, the subject of deaf-mute education received careful attention and some criticism. It was then and there claimed that departments connected with our public schools should be opened for the education of the deaf, articulation the sole medium of instruction, and the deaf made to mingle freely with other children, and also share the care and comforts of home, thus discarding State schools and the sign system of teaching entirely. This is no new project. The plan has been tried and tried again, and found wanting, and practically abandoned in repeated instances in Europe. In a country, or a State, so sparcely settled as this, it is utterly impracticable, and, moreover, where tried, it has failed to accomplish for the deaf what our State institutions are doing. In fact, no country in the world has done or is doing more or better work for the deaf at large than is done at the present time in this country, our aim being, not merely to reach a favored few, but all the deaf, bestowing the greatest good upon the greatest number.

TO BE PROVIDED FOR.

The loss of our shops by fire, on the eleventh of May, 1883, has not materially interfered with our industrial work, but the basement rooms now used as workshops are not suitable for permanent use, and, moreover, they are needed for other purposes. The rooms are too dark, and the use of gas-light during the daytime taxes the eye too severely, especially for children who use the eye, as the deaf are obliged to do. Well lighted and well ventilated rooms for shops should be provided, with as little delay as possible. They should be large enough for the accommodation of at least 100 boys, with rooms for a tailor shop, a printing office, a boot and shoe shop, a carpenter and cabinet shop, and sleeping apartments for the hired men, a hospital room to be used in case of contagious disease, and in this building a large room for a gymnasium. The opportunity for regular, systematic physical exercise for our pupils, at all seasons and in all kinds of weather, is so important that it is not necessary to argue the point at length. For nine hours a day our pupils are confined at the desk, or at the bench, and the time for relaxation is so short that some are disposed to neglect it entirely, especially in cold or stormy weather. With a suitable room and apparatus, all can readily be brought into the habit of regular, daily exercise, and health promoted, and the discipline and habits of the children improved as well. In connection with the shops such a room can be provided with comparative small expense, and I earnestly commend this subject to your careful consideration, as one of the pressing needs of the institution.

FOR THE DEAF AND DUMB DEPARTMENT.

The sum of $10,000 will be needed for the erection and furnishing these shops, providing larger and better water tanks, changing hall in north wing and a few other necessary improvements. Guided by the natural increase in attendance for the last ten years, I estimate there will be needed for current expenses the ensuing year, for 140 pupils, the sum of $34,000;* and for the next year, for 150 pupils, $36,000.*

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*Estimating $220 per capita for schooling and support, and all over this for the general fund and shops.

ACKNOWLEDGMENTS.

During the past two years quite a number of friends and patrons have very kindly remembered the pupils of this school and made them very happy. It would be a pleasure to call them all by name, and enumerate the gifts showing their substantial interest, but this will be impossible in some instances as the names of the donors are unknown.

Mrs. W. D. Washburn, of Minneapolis, will always be gratefully remembered for the very nice library donated, and increased from time to time. The books are admirably suited to the condition and wants of the pupils, and they will continue for years to interest and instruct the children who gather here, and so will prove to be a source of pleasure and profit to the school. Mrs. W. also remembered the children at Christmas.

Charles Thompson, of St. Paul, very kindly furnished the pupils with a good supply of Florida oranges.

Mr. Frank N. Peterson, of Franconia, has our sincere thanks for the generous supply of nuts and sweetmeats for the children on Christmas.

And Dr. B. Mattocks, of Faribault, for interesting juvenile books for the pupils.

The railway companies in the State have laid the Institute under renewed obligations for furnishing transportation at reduced rates. All the conductors and employes of the roads have been very kind and attentive to the children while in their care. Special mention should be made of the Chicago, Milwaukee & St. Paul; the Chicago & Nortwestern; the Minneapolis & St. Louis; the St. Paul & Duluth; the St. Paul, Minneapolis & Manitoba, and the Northern Pacific companies. Their aid has encouraged some to go to school, who, without it, would hardly have undertaken the task. For this aid, the companies have the sincere thanks of the pupils, patrons and officers of the institution.

The editors and proprietors of the newspapers and magazines, sent gratuitously or in exchange for the "Mute's Companion," have conferred a favor upon the school and aided many a child in a pleasant way in the acquisition of language. They have our sincere thanks, and it is hoped "they are not weary in well doing."

IN BRIEF.

The two years under review have had little to mark them save the quiet, steady growth of prosperity and usefulness. No severe sickness, or ailment of any kind has entered our halls, and no spirit of insubordination has prevailed among our pupils. In the main they have been studious, industrious, and obedient, and have made good use of their opportunities.

The teachers, officers, and employes generally, have been loyal and faithful, and are commended for the work they have accomplished and the spirit shown in doing it.

The gathering of so many men and women of experience in conference under our roof, in July last, was an occasion of great pleasure and profit to the teachers and all in attendance, and afforded us an opportunity to repay in some measure the kindness and assistance bestowed upon us in the past.

The education, care and training of the deaf are subjects attracting the attention of some of our ablest and best men and women, who are seeking for the education and amelioration of all, and the best methods of doing it.

It is painfully evident that quite a percentage of deaf children are still uneducated, and are growing up in ignorance and sometimes in vice and crime. For the first time in the annals of Minnesota last winter, a deaf mute was tried in our courts for crime. He was an uneducated foreigner.

The average age of those recently admitted is younger than formerly, and hence more favorable for permanent impressions and cultivation, but calling for more time and greater strength in order to learn a trade.

Our graduates are increasing in number and influence, and there are only a very few counties in the State that have not been represented in this school. None appreciate our work so highly as those who have tested its merits, and it is to be regretted there are any who know not the advantages of an education.

Over two hundred deaf children in the State of an educable age are reported as never having attended school.

There still is room for all, and the poor and needy should have county aid.

Rejoicing with you in view of what has already been accomplished, gratefully appreciating your co-operation and council, and seeking for Heavenly wisdom in future, I commend to your fostering care and the liberality of the State this noble institution.

Respectfully submitted,

J. L. NOYES, Superintendent.

FARIBAULT, MINN., October 31, 1884.

REPORT OF ATTENDING PHYSICIAN.

To the Honorable Board of Trustees:

GENTLEMEN—I take pleasure in submitting the following report of the health of the pupils during the last two years. There was a comparatively small amount of sickness, only about twenty pupils being confined to the hospital, the duration of sickness being from a few days to three weeks.

Proper hygienic surroundings and preventive measures were constantly adhered to, and with the most gratifying results.

The following are the number of the different diseases, vaccinations, and prescriptions, viz.:

Typhoid fever	2
Catarrhal fever	3
Congestion of Lungs	1
Heart Disease	1
Tonsilitis	6
Conjunctivitis	3
Iritis	1
Diphtheria	1
Eczema	8
Mumps	15
Concussion of Brain	1
Fractured Leg	1
Vaccinations	52
Prescriptions	554

Respectfully submitted,

P. G. DENNINGER, M. D.

Faribault, Minn., Oct. 31, 1884.

MALE PUPILS

IN THE

SCHOOL FOR THE DEAF.

NAME.	AGE.	ADMITTED.	POST OFFICE.	COUNTY.
Anderson, Syvert C	16	Sept. 19, 1882	North Fork	Stearns.
Anderson, Sumner E	11	Oct. 3, 1883	Anoka	Anoka.
Beltz, Fred	18	Sept. 8, 1875	Jordan	Scott.
Bowen, James S. S	13	Sept. 12, 1883	Minneapolis	Hennepin.
Bjorlee, Syvert E	16	Oct. 12, 1878	Albert Lea	Freeborn.
Bollinger, Adolph	16	Sept. 8, 1880	St. Paul	Ramsey.
Bjorlee, Johan	19	Oct. 12, 1878	Albert Lea	Freeborn.
Brant Frederick	14	Sept. 12, 1883	St. Paul	Ramsey.
Carver, Ralph H	12	Sept. 13, 1882	Beardsley.	Big Stone.
Clark, A. Ed	23	Oct. 20, 1883	Evanston	Cook, Ill.
Converse, Geo. E	13	Oct. 18, 1881	Hatfield	Pipe Stone.
Coyle, Edward	13	Dec. 22, 1883	Louriston.	Chippewa.
Devitt, James I	15	Oct. 22, 1879	St. Paul	Ramsey.
Dodge Chas. H. H	17	Sept. 12, 1877	Spring Valley	Fillmore.
Dougherty George	20	Sept. 9, 1874	Fountain	Fillmore.
Drought, Ralph H	16	Oct. 22, 1879	Owatonna	Steele.
Edwards, William G	14	Sept. 17, 1881	Minneapolis	Hennepin.
Ekberg, Albert	16	Dec. 5, 1882	Litchfield	Meeker.
Field, Sievart	24	Sept. 8, 1880	Sacred Heart	Renville.
Fischbach, Frank	12	Sept. 12, 1883	Cold Spring City	Stearns.
Flanagan, Jas. H	14	Sept. 9; 1880	St. Paul	Ramsey.
Flynn, John P	13	Sept. 14, 1881	Carimona	Fillmore.
Gale, Willie S	11	Sept. 12, 1883	Hamline	Ramsey.
Gunderson, Edward	19	Re-entered Sept 12,1883	Forest	Rice.
Gulikson, Gulike	36	Dec. 6, 1881	Sacred Heart	Renville.
Halverson, Edward	21	Nov. 17, 1879	Aurora	Steele.
Hanson, John	16	Sept. 11, 1878	Rushford	Fillmore.
Helmich, George O	12	Sept. 13, 1882	Carman	Polk.
Hennessey, John T	19	Sept. 14, 1881	Minneapolis	Hennepin.
Henderson, George V	17	Jan. 2, 1878	Faribault	Rice.
Hill, William	17	Oct. 30, 1879	St. Paul	Ramsey.
Howard, Jay Cooke	12	Sept. 28, 1882	Duluth	St. Louis.
Holm, Joseph	16	Dec. 13, 1881	New Ulm	Brown.
Holton, Grant	15	Oct. 22, 1879	Corra.	Olmsted.
Humble, Gustav H	25	Sept. 12, 1883	Winona	Winona.
Klagge, Fred. Ed	25	Sept. 14, 1881	Winona	Winona.
Laubby, Fred. T	12	Sept. 12, 1883	Duluth	St. Louis.
Landkammer, A	13	Sept. 12, 1882	Mankato	Blue Earth.
Larson, Lars	29	Oct. 21, 1875	Evansville	Douglas.
Larson, Charles T	10	Dec. 3, 1881	Minneota	Lyon.
Lynch, Lawrence	12	Sept. 20, 1883	Gentilly	Polk.
Manly, James	12	Sept. 27, 1882	Rushford	Fillmore.
Meade, John	17	Sept. 26, 1878	Belle Plaine	Scott.

List of Male Pupils — continued.

NAME.	AGE.	ADMITTED.	POST OFFICE.	COUNTY.
Meerkins, Henry	13	Oct. 15, 1883	Lake City	Wabasha.
Merrill, H. C.	10	Sept. 12, 1883	Waseca	Waseca.
McNeill, John	11	Oct. 20, 1882	West St. Paul	Dakota.
McNeely, Edward P.	13	Sept. 15, 1881	Faribault	Rice.
McKay, James D.	17	Oct. 3, 1877	De Graff	Swift.
Miller, Carl A.	16	Nov. 21, 1879	Watson	Chippewa.
Moxley, Robert	16	Oct. 16, 1882	Minneapolis	Hennepin.
Neeser, Gottlieb	19	Sept. 24, 1875	West St. Paul	Dakota.
O'Brien, John	23	Sept. 9, 1873	Rochester	Olmsted.
Ochs, William	23	Nov. 8, 1880	New Ulm	Brown.
Ormes, Charles C.	12	Sept. 13, 1883	St. Paul	Ramsey.
O'Leary, James H.	14	Sept. 8, 1880	Delano	Wright.
Oleson, John E.	18	Sept. 12, 1877	Brush Prairie	McLeod.
Palmer, C. A.	14	Sept. 13, 1880	St. James	Watonwan.
Peacha, Phillip B.	19	Sept. 12, 1877	Stillwater	Washington.
Peterson, Anton N.	14	Sept. 12, 1882	Urness	Douglas.
Peterson, John Peter	15	Oct. 21, 1882	Minneapolis	Hennepin.
Popki, Joseph	26	Jan. 10, 1880	Faribault	Rice.
Rand, Joseph B.	14	Oct. 22, 1879	Claremont	Dodge.
Roasberry, John	12	Sept. 14, 1881	Albert Lea	Freeborn.
Roth, Louis	12	Sept. 14, 1881	Faribault	Rice.
Ryan, James W.	12	Sept. 14, 1881	Fountain	Fillmore.
Sampson, Edward	15	Sept. 29, 1882	Minneapolis	Hennepin.
Schreyer Herman	14	Sept. 7, 1880	New Ulm	Brown.
Schroder, Anthony	17	Sept. 12, 1877	St. Paul	Ramsey.
Schwirtz, John	18	Sept. 13, 1876	Wabasha	Wabasha.
Shanks, H. A.	19	Sept. 8, 1875	Fairmont	Martin.
Shanisey, J. F.	17	Re-entered Sept 19, 1883	Plainview	Wabasha.
Shaw, Sampson J.	21	Nov. 6, 1882	Adams	Mower.
Sheridan, Thomas	15	Oct. 21, 1879	Dexter	Mower.
Slaven, Phillip	23	Sept. 13, 1876	Green Isle	Sibley.
Splettstoesser, C. T.	13	Nov. 15, 1879	St. Paul	Ramsey.
Stedman, Squire A.	17	Oct. 6, 1882	Lake Crystal	Blue Earth.
Streeter, Jesse	15	Oct. 22, 1879	Montrose	Wright.
Thompson, Charles	20	Sept. 10, 1873	St. Paul	Ramsey.
Thompson, Knudt	19	Jan. 2, 1877	Mansfield	Freeborn.
Vogt, Anthony	17	Oct. 3, 1876	Leavenworth	Brown.
Ward, George R.	14	Sept. 8, 1880	Sauk Center	Stearns.
Washburn, Caddie L.	18	April 2, 1875	Minneapolis	Hennepin.
Wolf, Henry	16	Sept. 11, 1878	Minneapolis	Hennepin.
Young, William	13	Sept. 14, 1881	Preston	Fillmore.

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FEMALE PUPILS

IN THE

SCHOOL FOR THE DEAF.

NAMES.	AGE.	ADMITTED.	POST OFFICE.	COUNTY.
Akkula, Elizabeth C	15	Nov. 16, 1881	Read's Landing	Wabasha.
Appel, Mary	13	Sept. 12, 1882	Brownsville	Houston.
Bently, Nora M	12	Oct. 10, 1882	Pleasant Grove	Olmsted.
Bergwall, S. B	18	Sept. 22, 1876	Stark	Chisago.
Brachtner, Mary	20	Sept. 25, 1877	St. James	Watonwan.
Cartee Mabel	21	Sept. 23, 1880	Minneapolis	Hennepin.
Courteau, Elmina Z	17	Sept. 12, 1877	Osseo	Hennepin.
Dam. Maren	17	Sept. 12, 1883	Albert Lea	Freeborn.
Dam, Bertoline C	9	Sept. 12, 1883	Albert Lea	Freeborn.
Elliott, Martha J	15	Nov. 3, 1879	Hastings	Dakota.
Engler, Emma D	12	Sept. 14, 1882	Chaska	Carver.
Fitzpatrick, Mary	20	Oct. 11, 1881	Rochester	Olmsted.
Frick, Bertha	21	Sept. 8, 1875	Watertown	Carver.
Gage, Myra Louise	14	Sept. 7, 1880	Winona	Winona.
Galvin, Katie	12	Sept. 14, 1881	Morris	Stevens.
Gloeser, Katie E. L	14	Sept. 15, 1880	West St. Paul	Dakota.
Gran, Katie A	10	Nov. 30, 1882	Elk Lake	Grant.
Graham, Mary E	19	Sept. 8, 1875	Minneapolis	Hennepin.
Gulikson, Margit	33	Dec. 6, 1881	Sacred Heart	Renville.
Gulikson, Annie	12	Feb. 21, 1883	Adams	Mower.
Hanson, Pauline O	25	Sept. 12, 1877	Morris	Stevens.
Helgeson, Margit	12	Dec. 6, 1881	Sacred Heart	Renville.
Heimsath, M. M	16	Nov. 29, 1882	St. Cloud	Stearns.
Houde, Mary E	18	Oct. 28, 1876	Paynesville	Stearns.
Hoy, Ella	17	Jan. 27, 1880	Minneapolis	Hennepin.
Johnson, Annie	12	Oct. 9, 1882	Minneapolis	Hennepin.
Johnson, Clara L. C	13	Sept. 13, 1882	Rushford	Fillmore.
Johnson, Martha M	20	Feb. 24, 1876	Vernon	Dodge.
Johnson, Sarah G	20	Sept. 11, 1878	New Ulm	Brown.
Kennelly, Mary	14	Sept. 16, 1882	Madelia	Watonwan.
Law, Mary F	14	Oct. 18, 1880	Stillwater	Washington.
Laubby, Frida A	12	Sept. 12, 1883	Duluth	St. Louis.
Lajord, Mary	13	Sept. 14, 1881	Holden	Goodhue.
Larntson, Martha	11	Sept. 12, 1883	Zumbrota	Goodhue.
Lyon, Grace L	14	Sept. 16, 1882	Rochester	Olmsted.
Maloney, Minnie	16	Sept. 7, 1880	Enterprise	Winona.
McCormick, Budda	17	Oct. 28, 1879	Monticello	Wright.
Meade, Mary Jane	14	Sept. 29, 1884	Belle Plaine	Scott.
Morris, Mary A	28	Sept. 8, 1880	Faribault	Rice.
Muller, Martha	16	Jan. 1, 1880	New Ulm	Brown.
Norton, Emma	13	Sept. 14, 1881	Dryden	Sibley.
Oraas, Anna H	12	Dec. 15, 1881	Stavanger	Yellow Med.
Oryall Ettie Mary.	14	Sept. 7, 1880	Minneapolis	Hennepin.

List of Female Pupils—Continued.

NAME.	AGE.	ADMITTED.	POST OFFICE.	COUNTY.
Patenaude, M. A	13	Sept. 14, 1881	Red Lake Falls	Polk.
Perry, Emma	18	Sept. 28, 1882	Minneapolis	Hennepin.
Peterson, Pauline	17	Oct. 14, 1881	Warner	Kandiyohi.
Peterson, M. M. A	12	Sept. 20, 1882	Franconia	Chisago.
Pherson, Ingra	12	Sept. 14, 1882	Roscoe Center	Goodhue.
Phillips, Christina	13	Sept. 13, 1882	Minneapolis	Hennepin.
Pierce, Ann E	14	Sept. 20, 1881	Mankato	Blue Earth.
Quesnell, Mary	11	Nov. 22, 1883	Red Lake Falls	Polk.
Rand, Mary F	16	Sept. 11, 1878	Claremont	Dodge.
Raxeisen, Mary	13	Oct. 16, 1882	St. Paul	Ramsey.
Reed, Mabel	17	Feb. 3, 1882	St. Paul	Ramsey.
Rodney, Mary E	14	Sept. 10, 1880	Wabasha	Wabasha.
Scharmer, Ida	17	Nov. 20, 1883	Arlington	Sibley.
Simpson, Lillie	22	Sept. 7, 1872	St. Paul	Ramsey.
Smith, J. R	19	Sept. 12, 1877	Faribault	Rice.
Starks, H. A	22	Sept. 12, 1882	Minneapolis	Hennepin.
Sterud, Helen	22	Sept. 11, 1878	Mazeppa	Wabasha.
Talge Bertha	18	Nov. 29, 1882	Hokah	Houston.
Thabes, Katie	14	Sept. 14, 1881	Minneiska	Wabasha.
Thorson, Ingeborg	26	Sept. 12, 1876	Ashby	Grant.
Torbet, Laura I	18	Sept. 12, 1877	Minneapolis	Hennepin.
Von Reuden, Theresa	14	Jan. 7, 1882	Deerfield	Steele.
Wilkins, Blanche H	11	Sept. 12, 1883	Minneapolis	Hennepin.
Yorgensberg, Mina O	18	Sept. 14, 1882	Canby	Yellow Med.

Deaf children in attendance—

Males	84
Females	67
Total	151

A List of the Uneducated Deaf and Dumb Children in the State "who have not attended the School in Faribault." Required by the Statutes of Minnesota.

NAME.	AGE.	RESIDENCE.	COUNTY.
Abel, John	9	Wakefield	Stearns.
Abel, John P.	11	Wakefield	Stearns.
Appel, John	......	Brownville	Houston.
Appel, Henry	......	Brownville	Houston.
Achman, Peter	12	Avon	Stearns.
Ackman, Edward A.	20	Kirkhoven	Swift.
Ainsworth, Andrew	22	Belle Prairie	Morrison.
Akola, Christina	13	Read's Landing	Wabasha.
Alson, Ada	10	Roscoe	Goodhue.
Anderson Fred	7	Anoka	Kandiyohi.
Anderson, Mary	11	Georgeville	Anoka.
Babcock, George H.	17	Quincy	Olmsted.
Baker, Michael	12	Wabasha	Wabasha.
Ballard, Bertha	17	Jackson	Jackson.
Benkies, Peter George	13	Millerville	Douglas.
Bentley, Johnson	......	Pleasant Grove	Olmsted.
Bilden, Anna Maria	17	Rock Dree	Olmsted.
Blanchard, Romeo	17	Witoka	Winona.
Bleatt, John	26	Elk River	Sherburne.
Blume, Eugene	20	Rapidan	Blue Earth.
Boyer, Lizzie	14	Worthington	Nobles.
Brandt, Emma	8	Tyrone	Le Sueur.
Branch, Catharine	22	Luxemberg	Stearns.
Branch, Katy	23	St. Augusta	Stearns.
Bessinger, ———	14	Albert Lea	Freeborn.
Bremer, Berter	13	Bristol	Fillmore.
Breatleach, Elizabeth	18	Spring Hill	Stearns.
Brooms, Alfred	18	Alexandria	Douglas.
Brown, Carrie	7	Red Wing	Goodhue.
Bagley, Carrie	5	Morristown	Rice.
Burghardt, Ida	20	Stillwater	Washington,
Carr, Anna	21	Minnetonka	Hennepin.
Carrifield, Master	......	Minnetrista	Hennepin.
Casserly, Mary	15	Westlime	Redwood.
Casey, John	14	Newry	Freeborn.
Corr, Anson	23	Meriden	Steele.
Cooper, Lily	19	Worthington	Nobles.
Coppellmann, Minnie	19	St. Peter	Nicollet.
Christianson, Peter	......	Clark's Grove	Freeborn.

Uneducated Deaf and Dumb Children — Continued.

NAME.	AGE.	RESIDENCE.	COUNTY.
Christopherson, Paul	......	Brandon	Douglas.
Clark, John	20	St. Paul	Ramsey.
Coleman, Laura	16	Shakopee	Scott.
Cox, Harmon A.	23	Maryarka	Martin.
Craig, John	25	Euclid	Polk.
Crump, Elizabeth	19	Northfield	Rice.
Cunningham, Honora	26	Washington Lake	Sibley.
Corser, Minnie A.	15	Chester	Wabasha.
Dam, Warren	16	Clark's Grove	Freeborn.
Dam, Lena P.	6	Clark's Grove	Freeborn.
Dam, M. P.	16	Clark's Grove	Freeborn.
Darn Lena C.	8	Riceland Twp	Freeborn.
Darn, Mary	17	Riceland Twp	Freeborn.
Denber, Joseph	18	Danville	Blue Earth.
Dicredan, Joseph	26	Stillwater	Washington.
Diabler, George	18	Danville	Blue Earth.
Dill, John	9	Courtland	Nicollet.
Dixon, Leslie	14	Lac qui Parle	Lac qui Parle.
Dohony, John	14	Jessenland Twp	Sibley.
Duffy, John	11	Denmark Twp	Washington.
Eastman, Archie H	11	Dewald Twp	Nobles.
Edwards, Thomas	25	Walnut Lake	Faribault.
Erickson, Erick	25	Cokato	Wright.
Edna, Anna	8	Lac qui Parle	Lac qui Parle.
Esslar, Thomas	14	St. Peter	Nicollet.
Falk, Edith	16	Odessa	Big Stone.
Foggerts, Catharine	21	Vernon Center	Blue Earth.
Frank, Michael	14	Traverse Twp	Nicollet.
Fuller, A.	22	Walnut Station	Redwood.
Gabwine, Flora	10	Minneapolis	Hennepin.
Gardner, Master	13	Stewart	McLeod.
Gennow, Amelia	10	Woodville	Waseca.
Genkyr, Frank	26	Winsted	McLeod.
Genkyr, Nancy	23	Winsted	McLeod.
Gerard Ernest	18	French Lake	Wright.
Geradin, Mary	12	St. Augusta	Stearns.
Greenwood, Frank	16	Jackson	Jackson.
Griffin, James	14	Minneapolis	Hennepin.
Gould, Jane	16	Zumbro Falls	Wabasha.
Gussomerson, Terga	26	Clayton	Faribault.
Gunderson, Gunder	10	Roscoe	Goodhue.
Gulbrandsen, Fred	......	Wilton	Waseca.
Guldmonson, Miss	16	Evansville	Douglas.
Guttermson, Thomas	25	Walnut Lake	Faribault.
Hanson, Edward	12	Spring Grove	Houston.
Hanson, Martheld.	12	Acton Twp	Meeker.
Harris, Mary Ann	26	Medford	Steele.
Hathaway, Emma H.	14	Crookston	Polk.
Hayes, Hynes	8	Greenfield	Wabasha.
Hale, Master	16	Houston	Houston.
Heacock, Lowell	25	Austin	Mower.
Halycky	4	New Prague	Scott.
Hassett, Mary	18	Alden	Freeborn.
Hikok, Lucy	22	Austin	Mower.

Uneducated Deaf and Dumb Children—Continued.

NAME.	AGE.	RESIDENCE.	COUNTY.
Heattie, Frank	10	Augusta	Lac qui Parle
Heinrich, Ella	20	Elgin	Wabasha.
Heinrich, Fred	18	Elgin	Wabasha.
Heffermeier, Sophia	24	Red Stone	Nicollet.
Henry, Charles	11	Ayr	Goodhue.
Howit, Robert	19	Northfield	Rice.
Holland, ———	15	Aspelund	Goodhue.
Holley, ———	15	Granite Falls	Chippewa.
Huberty, Henry	15	Rollingstone	Winona.
Huppman, Mary	21	Hampton	Dakota.
Huppman, Trace	22	Hampton	Dakota.
Jackson, Carrie	24	Rocky Run	McLeod.
Johnson, August	12	Hermann	St. Louis.
Johnson, August	11	Duluth	St. Louis.
Johnson, Emil	7	Rushford	Fillmore.
Johnson, Thomas	23	Nora	Pope.
Johnson, Frank	6	Home	Brown.
Johnson, James	13	Red Wing	Goodhue.
Johnson, Ibert	21	Havana	Steele.
Johnson, Anna	7	Clark's Grove	Freeborn.
Johnson, Master	...	Sleepy Eye	Brown.
Kahn, Dominie	...	Helena	Scott.
Keech, Albert	22	Lincoln	Blue Earth.
Kennedy, James	18	Eagle Lake	Blue Earth.
Kenettle, Dorotha	13	Ashley	Stearns.
Kennelly, Nellie	18	Mendota	Dakota.
Kiffmyer, Theresa	14	St. Augusta	Stearns.
Kinston, Eda	14	Blue Mounds	Pope.
Kelly, Edward	22	Walnut Lake	Faribault.
Kelsey, Henry	...	Fairpoint	Goodhue.
Kleckler, Nina	7	Spring Valley	Fillmore.
Knause, Elizabeth	15	Wakefield	Stearns.
Koeford, John	22	Centre	Pope.
Koeford, Julia	24	Centre	Pope.
Koster, Francis	10	Stillwater	Washington.
Lamb, Master	9	Frankfort	Mower.
Laertan, Carl	9	Woodland	Lyon.
Larson, Minnie	9	Canby	Yellow Med.
Larson, John	8	Ahrendable	Fillmore.
Larson, Minnie	16	Norman	Yellow Med.
Larson, John	9	Fremont	Winona.
La Plant, Ellen	14	Eyota	Olmsted.
La Gross, Miss	14	Ada	Polk.
Layman, Mary	24	Winona	Winona.
Lee, Christian	9	Yucatan	Houston.
Lee, John	10	Houston	Houston.
Lifquist, Ole	22	Compton	Otter Tail.
Leity, Oscar	23	Getty	Stearns.
Leen, Henry	13	Westfield	Dodge.
Leen, Malta	11	Westfield	Dodge.
Lindley, Master	11	Sauk Rapids	Benton.
Lippincott, C. E.	8	Anoka	Anoka.
Lunaas, Lars H.	19	Rome	Polk.
Lynch, Mary A.	17	Princeton	Mille Lacs.

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UNIVERSITY OF ILLINOIS

Uneducated Deaf and Dumb Children—Continued.

NAME.	AGE.	RESIDENCE.	COUNTY.
Malson, Carrie	11	Marysville	Wright.
Maloney, Francis	8	Montgomery	Le Sueur.
Man, Mary Olson	15	Montevideo	Chippewa.
Mansfield, Charles	8	Mankato	Blue Earth.
Marsh, Samuel	17	Marine Mills	Washington.
Matson, Carin	......	Waverly Mills	Wright.
Meat, Frederick A.	......	Money Creek	Houston.
McLaughlin, Josephine	22	Round Prairie	Todd.
Mead, Sterling	25	Campbell Twp	Wilkin.
Mend, Nancy Jane	14	Belle Prairie	Scott.
Mathemie, Clara	15	Canton	Fillmore.
Meehan, Anthony Jr	15	Faxon	Sibley.
Melony, J.	12	Yucatan	Houston.
Missler, Theo	8	Glencoe	McLeod.
Manly, Albert M.	8	Belle Plain	Scott.
McKonkey, Fannie	12	Cordova	Le Sueur.
Mitchell, Barney	22	Minneapolis	Hennepin.
Miller, Minnie	14	Maxwell	Lac qui Parle.
Miller, Bertha	18	Winona	Winona.
Miller, Fred	17	Oak Springs	Anoka.
Munson, Christina	19	Jackson	Jackson.
Murphy, Thomas	22	Winona	Houston.
Murray, Catherine	15	Glenderado	Benton.
Nagle, Effie	18	Dresbach	Winona.
Nagle, Joseph	21	Dresbach	Winona.
Neid, Annie	11	St. Paul	Ramsey.
Nelson, Anna	20	Limestone	Murray.
Nelson, Fred	14	Money Creek	Houston.
Nelson, Fred	8	Clarissa	Todd.
Nelson, Hannah	20	Grove City	Meeker.
Nelson, Mary	6	Clarissa	Todd.
Nelson, Anna	4	Clarissa	Todd.
Nelson, Henry Jr	16	Albert Lea	Freeborn.
Nurengarken, Gertrude	17	St. Wendel	Stearns.
Oleson, Elida	15	Holmes City	Douglas.
Olson, ——	16	Grand Meadows	Mower.
Olson, Christina	10	Dane Prairie	Otter Tail.
Olson, Ole B.	14	Vinan	Waseca.
Paulson, Stein	19	Minnesota Twp	Goodhue.
Peterson, Matilda	11	St. Paul	Ramsey.
Peterson, O.	20	Waverly Mills	Wright.
Paulson, Steen	19	Wanamingo	Goodhue.
Plattner, Mary	16	Franklin	Wright.
Purcell, P.	23	Clontarf	Swift.
Randall, Ellen J.	23	Le Roy	Mower.
Randall, John	17	Lenora	Fillmore.
Reider, Mary	19	Munson	Stearns.
Reishus, Mary	12	St. Paul	Ramsey.
Rabe, W. S. M	19	Middleville	Wright.
Rice, Charles W.	15	Fountain Twp	Fillmore.
Renkies, Peter George	13	Millerville	Douglas.
Rennie, Francesca	16	St. Wendel	Stearns.
Ruebenhagen, Augusta	19	Transit	Sibley.
Roatz, Lizzie	19	St. Paul	Ramsey.
Robb, Lettie	14	Winona	Winona.

Uneducated Deaf and Dumb Children—Continued.

NAME.	AGE.	RESIDENCE.	COUNTY.
Renkes, George	12	Brandon	Douglas.
Sackse, Charles W	24	Red Rock	Mower.
Sanborn, Minnie W	16	Litchfield	Meeker.
Schill, Jacob	15	Fair Haven	Stearns.
Schleimer, Herman	23	Eden Twp	Brown.
Schneider, George	13	Lake Henry	Stearns.
Schulte, Anna	17	Grove	Stearns.
Selin, Gustave	......	Fish Lake Twp	Chisago.
Schott, Henry	14	Stockton	Winona
Sinblad, Alma J	13	Willmar	Kandiyohi.
Simon, Albert	21	Jackson	Jackson.
Smith, Eva	14	Alden	Freeborn.
Smith, Nathan	9	St. Paul	Ramsey.
Schlishner, Hermann	18	Sleepy Eye	Brown.
Sinks, Miss	7	St. Paul	Ramsey.
Sumnersyke, John	12	Prescott	Faribault.
Thompson, Master	......	Owatonna	Steele.
Valder, H. H	......	Newburg	Fillmore.
Vandegraft, Edith	8	Austin	Mower.
Wade, Mary E	19	Sauk Center	Stearns.
Waldron, Mertyn	9	Cascade	Olmsted.
Walker, Mary	18	Princeton	Mille Lacs.
Walter, George	......	Norwood	Carver.
Watson, Margaret	9	Lake City	Wabasha.
Watson, Arto	5	Lake City	Wabasha.
Westbrod, Emma	13	Elizabethtown	Otter Tail.
Weymouth, Allen	21	Madelia	Watonwan.
Whalen, Joseph	25	St. Paul	Ramsey.
Whittemore, Evie	16	Sandiago	Sherburne.
Whittemore, Herbert	10	Sandiago	Sherburne.
Wilke, Augusta	25	Effington	Otter Tail.
Wilkins, Elvira	15	Big Lake	Sherburne.
Wilkins, Miss	19	Sauk Center	Stearns.
Williams, Theresa	25	Alexandria	Douglas.
Wilson, Mary	......	Geneva	Freeborn.
Wood, Walter	17	Warren	Marshall.
Wood, Master	18	Euclid	Polk.
Worthington, Miss	......	Winona	Winona.
A Deaf-Mute Boy	13	Owatonna	Steele.
A Deaf-Mute Boy	14	Fergus Falls	Otter Tail.
A Deaf-Mute German Girl	14	Little Falls	Morrison.
Yerkins, Henry	11	Lake City	Wabasha.
Yuam, Mary	23	Amador Twp	Chisago.
Zahn, John	17	Elizabeth	Otter Tail.

Uneducated deaf-mute children, 247.

TERMS OF ADMISSION.

I. The school is *free*, and open to all the deaf and dumb in the State, between the ages of *ten* and *twenty-five* who are capable of receiving instruction. The only charge is for incidental expenses.

II. All applicants for admission should be in good health, free from immoralities of conduct, and from offensive and contagious diseases.

III. Application for admission, and all letters of inquiry concerning pupils should be addressed to *J. L. Noyes*, *Faribault*, *Rice County*, *Minnesota*, Superintendent of the school; and to avoid any unnecessary expense or disappointment, applicants, before leaving home, should obtain a written communication from the superintendent, certifying that application has been made, and stating the time when the institution will be ready to receive them.

IV. The commencement of the term is the only proper time for the admission of pupils, and none will be received at any other time except for the best of reasons. The term commences on the SECOND Wednesday of September, and continues thirty-nine weeks.

V. Applicants, and all pupils returning at the beginning of the term, should come well supplied with clothes — at least two suits for summer, and two for winter use, and three towels — in a good trunk, and every article marked in the name of the owner.

VI. *Six years is the regular term* of instruction, and all who are admitted should remain this length of time, except for reasons satisfactory to the Superintendent. At the expiration of the regular term, two years more may be added, upon the recommendation of the superintendent, and the approval of the board of directors.

VII. There is but *one vacation* in the year, commencing on the close of the term in June, and continuing to the SECOND Wednesday in September.

VIII. No provision is made for boarding pupils at the institution in vacation-hence parents and guardians of pupils should be particular to make arrange, ments to convey their children home at the close of the term, and inform the superintendent of the same, at least two weeks before the school closes.

A small sum of money, not less than five dollars, should be deposited with the superintendent, for incidental expenses, such as repairing clothes, boots and shoes, providing text books, postage, stationery, and the like.

No parent or guardian should remove a pupil during term time even for a day, or communicate with him on the subject, without first consulting the superintendent.

It is especially important that parents be particular to return their children *promptly* at the commencement of each term. The superintendent will endeavor to make arrangements with the different railway companies, by which pupils going home and returning promptly at the time named above, will be conveyed at *half fare.*

When an applicant comes to the institution, some person should accompany him, prepared to give the following information, unless previously rendered, or bring, in writing, definite answers to these questions, to-wit:

QUESTIONS.

1. What is the full name of the applicant?

2. In what place, year, month and day was the applicant born?

3. What are the full names of the father and mother? Are both living?

4. What is the occupation of the father, and to what nation do the parents belong?

5. What is the post office address and residence of the parents, or guardian, giving township and county in which they live?

6. What is the nearest railroad station, and on what road is it?

7. What are the names of the applicant's brothers and sisters, in order, commencing with the oldest?

8. Has the applicant any brothers, sisters, or relatives, who are deaf and dumb, or blind, or even partially so, giving name and cause in each case?

9. Was there any blood relation between the parents before marriage? If so, what?

10. What is the cause of the applicant's deafness, and at what age did it occur? If born deaf, can you assign any cause?

11. Can the applicant hear any, and, if so, what sounds?

12. Has the applicant ever been to school any? If so, when, where and how long?

13. Is the applicant of a sound mind, in good health, and free from bodily deformity, immoral habits, and from contagious diseases?

14. Has the applicant been vaccinated, had the small-pox, the scarlet fever, the measles, the mumps, or whooping cough?

15. What church do you wish the applicant to attend on the Sabbath?

16. Is it your purpose to give the applicant a full course of study in this institution?

17. Are you a citizen of Minnesota, and by what name are you known?

SPECIAL NOTICE.

All letters or packages sent to members of the school should contain the words, "Minn. School for the Deaf," as a part of the address, in order to secure prompt delivery.

The pupils are *required* to write home once a month, and may write oftener if desired.

Letters are written for those who cannot write themselves, and any neglect of pupils to write, or misunderstanding, or complaints of pupils concerning their schooling or treatment should be made known at once to the superintendent.

Parents who desire to furnish their children with spending money, are advised to deposit it with the superintendent, who will keep proper account of the same, and endeavor to secure safe keeping and proper expenditure. The school cannot be responsible for money sent directly to the pupils. Express packages or money to the amount of fifty cents and upwards, when sent to the superintendent, will be duly acknowledged by mail.

The school is not responsible for the safety of pupils while traveling to and fro, or in case of truancy. All reasonable assistance in such cases, however, will be cheerfully rendered by the officers of the school.

The parents and guardians of pupils will please bear in mind that there is no vacation or recess of school during the holidays ; hence they should not expect their children home, or encourage their going at this inclement season of the year.

The use of tobacco in any form, and spirituous liquors of any kind, by the pupils, is strictly forbidden.

Careful attention to the above will be of special service to the pupils, save trouble, and promote the best interests of the school.

J. L. NOYES, Superintendent.

The following newspapers have been sent to the School in exchange for the Mute's Companion. The Editors and Publishers will please accept the sincere thanks of both pupils and officers for them. Their continuance is respectfully solicited.

NAME.	PLACE OF PUBLICATION.	PUBLISHER.
Daily.		
Pioneer Press	St. Paul & Minneapolis	Pioneer Press Co.
Tribune	Minneapolis	Tribune Pub. Co.
Globe	St. Paul	Globe Printing Co.
Weekly.		
Advance	Red Wing, Minn	Red Wing Printing Co.
Advocate, N. W. Christian	Chicago	Cranston & Stowe.
Argus, Houston Co	Caledonia, Minn	
Bee	Blue Earth City, Minn..	Carr Huntington.
Chronicle, Northwestern...	St. Paul, Minn	
Courier	Shakopee, “	C. A. Stevens.
Democrat	Faribault, “	A. E. Haven.
Eagle	Delano, “	I. Gutzwiller, Jr.
Enterprise	Glencoe, “	Enterprise Printing Co.
Eureka	Anamosa, Iowa	E. Booth & Son.
Express	Mantorville & Kasson, Minn	Smith & Lorraine.
Gazette	Hastings, Minn	Irving Todd.
Herald	Anoka, “	Alvah Eastman.
Herald, Big Stone Co	Ortonville, “	L. C. Lane.
Herald, Waseca Co	Waseca, “	Morse & Murphy.
Herald	Winona, “	W. J. Whipple.
Independent	Henderson, “	McLeod & Dodge.
Journal	Owatonna, “	F. T. Drebert.
Journal-Press	St. Cloud, “	W. B. Mitchell.
Messenger	Glenwood, “	K. J. Kinney.
News, Douglas Co	Alexandria, “	Jos. Gilpin.
News-Ledger	Litchfield. “	W. D. Joubert.
Republican	Faribault, “	A. W. McKinstry.
Republican	Red Wing, “	Red Wing Printing Co.
Republican	Winona, “	D. Sinclair & Co.
Tribune	Sauk Centre, “	W. C. Brower.
Adler	Winona, “	E. Gerstenhauer.
Budstikken	Minneapolis “	....
Folkrets Tidning	Minneapolis & St. Paul	Swedish Pub. Co.

Newspapers received at the Institution.—Continued.

NAME.	PLACE OF PUBLICATION.	PUBLISHER.
Stats Tidning	St. Paul & Minneapolis	Lutheran Pub Society.
Post	New Ulm, Minn.	Ludwig Bogen.
Volkszeitung	St. Paul	
Carletonia	Northfield, Minn.	Students of Carleton Col.
Minnesota Missionary	Faribault, "	
Philanthropic Index and Review	Kalamazoo, Mich.	Dr. C. T. Wilbur.
Shattuck Cadet	Faribault, Minn.	Students of Shattuck Sch'l
Teacher	Philadelphia, Pa.	Eldrege & Bro.
Apples of Gold, weekly	New York	Am. Tract Society.
Morning Light, monthly		
Picture World	Philadelphia, Pa.	Am. Sunday School Union.
Youths World		
Century Magazine	New York	Century Co.
St. Nicholas		
Harper's Bazar	New York	Harper & Bros.
Monthly		
Weekly		
Young People		
Weekly Tribune		
Youths Companion	Boston	Perry, Mason & Co.
Deaf-mute Papers.		
Annals, quarterly	Washington, D. C.	E. A. Fay, Editor.
Auralist, monthly	Omaha, Neb.	Nebraska Inst.
Bulletin, semi-monthly	Frederick, Md.	Maryland School.
Deaf-mute Advance, wkly	Jacksonville, Ill.	Frank Read.
Deaf-mutes' Journal, "	New York	E. A. Hodgson.
Deaf-mute Leader "	Brooklyn, N. Y.	W. A. Bond.
Goodson Gazette "	Staunton, Va.	Virginia Inst.
Hawkeye "	Council Bluffs, Ia.	Iowa Inst.
Journal, semi-monthly	Omaha, Neb.	Nebraska Inst.
Ky. Deaf-mute, monthly	Danville, Ky.	Kentucky Inst.
Index, weekly	Colorado Springs, Col.	Colorado Inst.
Mirror, weekly	Flint, Mich.	Michigan Inst.
New Method, monthly	Chicago, Ill.	Miss Mary McCowan.
Nucleus, weekly	Rome, N. Y.	Central New York Inst.
Observer, monthly	Knoxville, Tenn.	Tennessee Inst.
Optic, weekly	Little Rock, Ark.	Arkansas Inst.
Paper for Our Little People, weekly	Rochester, N. Y.	Western New York Inst.
Pelican, monthly	Baton Rouge, La.	Louisiana Inst.
Ranger, "	Austin, Texas	Texas Inst.
Record, weekly	Fulton, Mo.	Missouri Inst.
Star, "	Olathe, Kansas	Kansas Inst.
Times, "	Delavan, Wis.	Wisconsin Inst.
Tablet, "	Romney, W. Va.	W. Virginia Inst.
Vis-a-Vis, "	Columbus, Ohio	Ohio Inst.
Voice, "	Jackson, Miss.	Mississippi Inst.

STEWARD'S REPORT.

To the Board of Directors:

GENTLEMEN — Herewith is respectfully submitted the Steward's Report, commencing Dec. 1, 1882, ending July 31, 1884:

CASH COLLECTED FROM THE FOLLOWING SOURCES:

From the School for the Deaf and Dumb	$1,553	80
From the School for the Blind	161	62
From the School for the Imbeciles	168	73
From the shoe shop	1,467	85
From the tailor shop	542	11
From the broom shop	1,090	90
From the printing office	162	19
From the sewing room	192	14
Total	$5,339	34

EXHIBIT OF THE COST OF THE SEVERAL SCHOOLS.

Classified current expense from Dec. 1, 1882 *to Aug.* 1, 1883.

	Deaf and Dumb.	Blind.	Imbecile.
Salaries	$5,801 74	$1,539 34	$1,537 34
Wages	2,586 40	733 83	997 23
Butter and eggs	833 67	308 22	315 58
Groceries	1,006 17	429 85	506 04
Flour and Feed	615 13	124 36	434 49
Hardware and tinware	163 99	110 48	82 85
Bread and crackers	62 60	256 81	23 78
Books and stationery	141 97	38 12	14 84
Crockery and glassware	31 14	19 67	41 38
Dry goods and clothing	195 63	41 69	139 60
Shoe shop supplies	740 10		
Cooper shop supplies	30 94		
Broom shop supplies		637 23	
Printing office supplies	72 18		
Meats and poultry	1,235 71	415 94	529 27
Postage and periodicals	110 20	27 60	10 81
Gas and oil	704 66	51 97	34 48
Blacksmithing	23 94	1 85	3 40
Freight and express	5 90	4 02	
Music and instruments		23 67	
Fuel	3,588 72	1,031 62	1,060 23
Repairs	1,093 64	985 52	297 73
Beds and bedding	214 95	23 90	43 80
Drugs	44 43	17 47	33 30
Fish	89 93	18 45	44 47
Fruit	174 33	74 86	91 87
Stock	1 00		138 45
Farm and garden	162 40	1 13	65 00
Vegetables	25 20	27 00	27 96
Soap	57 08	22 53	65 37
Furniture and repairs	79 05	11 50	47 40
Miscellaneous labor	191 62	75 15	6 25
Lumber	269 86	44 56	75 71
Steam heating supplies	275 19		5 87
Sundries	238 31	104 05	116 17
Tools, account printing office	41 78		
Tools, account cooper shop	14 90		
Tools, account shoe shop			
Tools, account broom shop		21 15	
Vehicles and repairs	115 70	15 94	12 75
Telephone	28 00	28 00	28 00
Milk			37 55
Type writer		30 00	
Trees and shrubs			65 50
	$21,068 16	$7,314 15	$6,917 80

CLASSIFIED CURRENT EXPENSES, AUGUST 1, 1883, TO AUGUST 1, 1884.

	Deaf and Dumb.	Blind.	Imbecile.
Salaries	$8,904 42	$2,748 01	$2,594 93
Wages	4,082 71	1,384 28	1,829 17
Butter and eggs	1,396 07	348 20	508 36
Groceries	1,283 74	579 18	730 31
Flour and feed	831 57	326 72	509 03
Hardware and tinware	466 47	365 36	396 44
Bread and crackers	122 84	32 73	23 96
Books and stationery	408 04	93 68	43 39
Crockery and glassware	85 55	92 27	64 51
Dry goods and clothing	620 79	413 84	577 27
Shoe shop supplies	1,223 05	....	....
Tailor shop supplies	7 20	....	....
Printing office supplies	116 56	....	....
Broom shop supplies	....	943 36	....
Meats and poultry	2,074 92	505 22	898 67
Postage and periodicals	140 50	32 55	15 50
Gas and oil	1,069 59	56 22	52 03
Blacksmithing	39 05	48 85	23 70
Freight and express	52 60	19 42	2 45
Fuel	3,699 49	1,755 75	1,225 54
Repairs	1,877 56	3,903 80	828 48
Bedding	115 75	4 00	63 25
Drugs	72 52	37 41	79 22
Fish	134 21	44 99	64 32
Fruit	506 15	166 48	236 60
Stock	167 50	24 00	145 50
Farm and garden	520 91	187 17	195 09
Vegetables	34 00	18 85	19 46
Vehicles and repairs	75 50	60 70	16 70
Soap	93 88	59 42	115 65
Furniture	358 24	443 75	193 88
Miscellaneous labor	299 74	837 38	273 93
Lumber	166 46	30 36	107 13
Steam heating supplies	469 79	193 39	52 07
Sundries	761 00	370 81	240 88
Telephone	44 00	44 25	44 00
Milk	55 43	....	....
Fire escape ladders	537 00	....	306 00
Tool account, printing office	101 46	....	....
Tool account, cooper shop	58 90	....	....
Insurance	33 35	194 00	....
Trees and shrubs	....	....	....
Cooper shop supplies	8 75	....	....
Music	14 00	211 58	4 00
	$33,131 26	$16,577 98	$12,481 42

STATEMENT OF SHOPS.

SHOE SHOP.

	Dr.	
For accounts	$853 90	
For stock	720 76	
For salary of foreman and supplies	2,135 17	
		$3,709 83
Contra.	*Cr.*	
By accounts	$1,028 40	
By stock	143 47	
By cash	1,467 85	
Balance	1,070 11	
		$3,709 83

TAILOR SHOP.

	Dr.	
For accounts	$707 06	
For supplies	16 00	
For stock	207 27	
		$930 33
Contra.	*Cr.*	
By accounts	$255 00	
By stock	133 22	
By cash	542 11	
		$930 33

SEWING ROOM.

	Dr.	
For salary of instructors	$371 65	
For accounts	5 36	
Balance	58 72	
		$435 73

Contra. *Cr.*		
By work for institute	$238 23	
By cash	192 14	
By account	5 36	
		$435 73

BROOM SHOP.

Dr.		
For accounts	$478 68	
For stock	357 30	
For salary of foreman and supplies	1,585 92	
		$2,421 90
Contra. *Cr.*		
By sundries furnished institute	$50 75	
By accounts	255 63	
By cash	1,090 90	
By stock	550 69	
Balance	473 93	
		$2,421 90

PRINTING OFFICE.

Dr.		
For accounts	$107 80	
For stock	125 25	
For supplies	201 44	
Balance	207 24	
		$641 73
Contra. *Cr.*		
By accounts	$189 76	
By sundries furnished institute	231 78	
By cash	162 19	
By stock	58 00	
		$641 73

COOPER SHOP.

Dr.		
For expenses and deduction	$83 00	
Balance	76 67	
		$159 67
Contra. *Cr.*		
For making barrels	$159 67	
		$159 67

FARM PRODUCTS FOR THE SEASON, 1883.

Hay, tons	50
Potatoes, bushels	1,300
Oats, bushels	700
Corn, bushels	250
White Beans, bushels	33
Onions, bushels	40
Cabbages	1,500
Celery	2,000

And other vegetables sufficient for the institute.

1884.

Hay, tons	60
Potatoes, bushels	1,700
Corn, bushels	700
Oats, bushels	420
Cabbages	2,500
Celery	3,000

And other vegetables sufficient for the institute.

STOCK.

Horses	3
Yoke Oxen	1
Cows	16
Young Cattle, head	12
Hogs and Shoats	18

A LIST

Of the persons employed in the Institute with their compensation, 1882 *and* 1883.

GENERAL OFFICERS.

R. A. Mott, Secretary, non-resident, per annum	$ 300 00
H. Wilson, Treasurer, non-resident, per annum	100 00
H. E. Barron, Steward, non-resident, per annum	1,200 00

CONNECTED WITH THE SCHOOL FOR THE DEAF AND DUMB.

J. L. Noyes, Superintendent, resident, per annum	$1,500 00
Allowed for clerk hire	200 00
Geo. Wing, Teacher, non-resident, nine months	1,200 00
L. C. Tuck, Teacher, non-resident, nine months	800 00
W. Ki Barr, Teacher, non-resident, nine months	800 00
Miss Kate E. Barry, Teacher, resident, nine months	400 00
Miss Annie J. Wicktom, Teacher, resident, nine months	300 00
Miss Nellie M. Franklin, Teacher, resident, nine months	260 00
Miss Fanny Wood, Teacher, resident, nine months	400 00
Mrs. A. R. Hale, Matron, resident, per annum	500 00
Miss Belle A. Huntington, Mistress of Sewing Room, resident nine months	250 00
Dr. P. G. Dinninger, Physician, non-resident, nine months	200 00
J. R. Sendner, Foreman of Shoe Shop, non-resident, per month	55 00
Olof Norling, Tutor, resident, per month	15 00
T. T. Gage, Boys' Supervisor, resident, per month	15 00
A. B. Irvine, Engineer, non-resident, per month	60 00
N. P. Rood, Watchman, non resident, per month	30 00
Wm. Kelly, Fireman, resident, per month	18 00
Michael Kelly, Teamster, non-resident, per month	30 00
I. Wescott, Choreman, resident, per month	20 00
Miss S. M. Blaikie, Dress-Maker, per month	15 00
Miss Ann Byrne, Matron's Assistant, resident, per month	16 00
Miss Theresa Riesel, Cook, resident, per month	15 00
Miss Rosa Lala, Baker, resident, per month	14 00
Miss Nellie Murry, Assistant Cook, resident, per month	10 00
Miss Annie Johnson, Laundress, resident, per month	17 00

Miss Kate Carroll, Laundress, resident, per month	14 00
Miss Nora Berrigan, Chambermaid, resident, per month	12 00
Miss Sarah Carroll, Chambermaid, resident, per month	10 00
Miss Alice Crosby, Chambermaid, resident, per month	12 00
Miss Mary Crosby, Chambermaid, resident, per month	12 00
Miss Thea Buea, Waitress, resident, per month	12 00
Miss Betsey Brusletten, Dining-room Girl, resident, per month	10 00

D. F. Munro, Foreman of Tailor Shop, without salary.

CONNECTED WITH THE SCHOOL FOR THE BLIND.

1882–83.

J. J. Dow, Superintendent, resident, per annum	1,000 00
Miss Katie Burnes, Matron, resident, per annum	250 00
Miss Minnie Hegman, Teacher of Music, resident, nine months	250 00
Miss Mary Kirk, Teacher of Music, resident, nine months	250 00
Miss Alice Mott, Teacher, resident, nine months	250 00
Albert Fleckenstein, Teacher of Music, non-resident, nine months	150 00
Dr. G. H. Knight, Physician, non-resident, nine months	100 00
Abram Phillman, Foreman of Broom-shop, resident, per month	30 00
Michael Favro, Choreman, resident, per month,	20 00
Mary Lyon, Cook, resident, per month	15 00
Dora Brands, Laundress, resident, per month	13 00
Emma Mills, Laundress, resident per month	10 00
Nellie Simpson, Waitress, resident, per month	10 00
Mary Shields, Chambermaid, resident, per month	10 00
Mary Comfort, Chambermaid, resident, per month	10 00

CONNECTED WITH THE SCHOOL FOR IMBECILES.

1882–83.

Dr. G. H. Knight, Superintendent, resident, per annum	1,000 00
Miss Lettie Helmer, Matron, resident, per annum	300 00
Miss M. E. Powers, Teacher, resident, per annum	500 00
Miss Hattie Wilson, Teacher, resident, per annum	200 00
Walter Goodman, Trainer, resident, per month	25 00
Louis Grimdohl, Attendant, resident, per month	22 00
Henry Rumeis, Choreman, resident, per month	15 00
Mary Corbett, Attendant, resident, per month	14 00
Mary Hagan, Cook, resident, per month	15 00
Katie Meirer, Assistant Cook, resident, per month	12 00

Julia Sweeny, Waitress, resident, per month	10 00
Mary Anderson, Laundress, resident, per month	14 00
Mary Olesen, Laundress, resident, per month	11 00
Jurena Christianson, Chambermaid, resident, per month	10 00

CONNECTED WITH THE SCHOOL FOR THE DEAF.

1883–84.

GENERAL OFFICERS.

R. A. Mott, Secretary, non-resident, per annum	$ 300 00
H. Wilson, Treasurer, non-resident, per annum	100 00
H. E. Barron, Steward, non-resident, per annum	1,200 00

CONNECTED WITH THE SCHOOL FOR THE DEAF.

J. L. Noyes, Superintendent, resident, per annum	$1,500 00
J. L. Noyes, allowed for clerk hire	200 00
Geo. Wing, Teacher, non-resident, 9 months	1,200 00
L. C. Tuck, Teacher, non-resident, 9 months	850 00
W. Ki Barr, Teacher, non-resident, 9 months	850 00
J. P. Kelly, Teacher, resident, 9 months	250 00
Miss Anna J. Wicktom, Teacher, resident, 9 months	320 00
Miss Etta P. McWhorter, Teacher, resident, 9 months	250 00
Miss Abbey E. Axtell, Teacher, resident, 9 months	250 00
Miss Nellie M. Franklin, Teacher, resident, 9 months	260 00
Mrs. A. R. Hale, Matron, resident, per annum	500 00
Dr. P. G. Denninger, Physician, non-resident, 9 months	200 00
Miss S. M. Blaikie, Mistress of sewing room, resident, 9 months	180 00
Chas. Suess, Foreman of shoe shop, non-resident, per month	40 00
Olof Norling, Tutor, resident, per month	18 00
T. T. Gage, Boys' Supervisor, resident, per month	18 00
N. P. Rood, Watchman, non-resident, per month	30 00
A. B. Irvine, Engineer, non-resident, per month	60 00
Michael Kelly, Teamster, non-resident, per month	30 00
E. Douherty, Fireman, resident, per month	18 00
Wm. Kelly, Laborer, resident, per month	20 00
John Murphy, Choreman, resident, per month	20 00
Miss Anna Johnson, Laundress, resident, per month	17 00
Miss Mary Oleson, Laundress, resident, per month	14 00
Miss Anna Byrne, Hospital Attendant, resident, per month	18 00
Mrs. P. K. Moon, Hospital Attendant, resident, per month	15 00
Miss Nora Berrigan, Chambermaid, resident, per month	12 00
Miss Kate Carroll, Chambermaid, resident, per month	12 00
Miss Alice Crosby, Chambermaid, resident, per month	12 00

Miss Nellie Murray, Dining-room Girl, resident, per month	12 00
Miss Mary Crosby, Dining-room Girl, resident, per month	13 00
Miss Bessie Crosby, Waitress, resident, per month	10 00
Miss Jennie Oleson, Cook, resident, per month	17 00
Miss Kate McShane, Assistant Cook, resident, per month	12 00
Miss Rosa Lala, Baker, resident, per month	15 00
D. F. Monro, Foreman of tailor shop without salary.	

CONNECTED WITH THE SCHOOL FOR THE BLIND.

1883–84.

J. J. Dow, Superintendent, resident, per annum	$1200 00
Miss Katie Burnes, Matron, resident, per annum	350 00
Olof Phersson, Landscape Gardener, non-resident, per month	80 00
Miss Alice Mott, Teacher, resident, 9 months	300 00
Miss Mary Kirk, Teacher, resident, 9 months	300 00
Miss Minnie Hegman, Teacher of Music resident, 9 months	315 00
Albert Fleckenstein, Teacher of Music, resident, 9 months	200 00
M. B. Gaines, Foreman of Broom Shop, resident, per month	25 00
Dr. G. H. Knight, Physician, non-resident, 9 months	100 00
Ella Mahony, Laundress, resident, per month	15 00
Annie Owens, Waitress, resident, per month	10 00
Mary Burnes, Attendant, resident, per month	15 00
Mary Shields, Chambermaid, resident, per month	12 00
Emma O'Brien, Waitress, resident, per month	10 00
M. Fredericks, Cook, resident, per month	15 00
M. Eckberg, Assistant Cook, resident, per month	10 00
Mary Keirns, Chambermaid, resident, per month	12 00

CONNECTED WITH THE SCHOOL FOR IMBECILES.

1883–84.

Dr. Geo. H. Knight, Superintendent, resident, per annum	$1,200 00
Miss Lottie Helmer, Matron, resident	300 00
Miss M. E. Powers, Teacher, resident, 10 months	500 00
Miss Hattie Wilson, Teacher, resident, 10 months	225 00
Joseph Massey, Assistant, resident, per annum	540 00
Louis Gumdahl, Attendant, resident, per month	25 00
Leonard Oleson, Attendant, resident, per month	22 00
Andrew Peterson, Choreman, resident, per month	20 00
Mary Hagan, Cook, resident, per month	15 00
Katie Meirer, Assistant Cook, resident, per month	10 20

Mary Corbett, Attendant, resident, per month	14 00
Julia Sweeny, Waitress, resident, per month	11 00
Mary Anderson. Chambermaid, resident, per annum	11 00
Augusta Anderson, Chambermaid, resident, per month	11 00

The amounts expended for miscellaneous labor and general repairs at the several schools have been large, caused at the School for the Deaf and Dumb by the necessity of laying a large sewer pipe to the river a distance of 1,800 feet; rebuilding the cooper shop, destroyed by fire; building a large cistern for soft water; painting the woodwork of the wings and the roof of the entire building.

At the Blind, the building of the main center necessitated many alterations in the old building to adapt it to the new. A large part of the basement which never has been finished, has now been completely finished for laundry use. The plumbing had all to be changed, also most of the sewerage, all being nearly worthless. A large soft water cistern was also required; quite a large amount has also been required to be expended in grading the grounds and changing the walks and drives.

The addition to the School for Imbeciles, under contract to be built by Mr. A. H. Hatch, is progressing rapidly with every prospect of an early completion.

The system for fire protection, established at the several schools, consists as follows: at the Deaf and Dumb there are three lines of stand pipe, connected with the city water mains and also with the steam pump in the boiler room, each line runs from the basement to the attic; on each floor, at each line, and also in the boiler room, a section of hose is attached, so that water can be supplied to any part of the building at a moment's notice. At the School for the Blind there are two lines of stand pipes supplied with hose and connected to the city mains, and at the School for Imbeciles there are three lines supplied and connected in the same manner, so that under ordinary circumstances the chances of putting out a fire are good.

The loss of the cooper shop, the shoe and tailor shop, was also the occasion of loss to the products of those shops by damage to goods, delay, &c.

Since the last report, an arrangement has been made with Mr. D. F. Munro, the former foreman of the tailor shop, to furnish all the material and take all the product of that shop. This arrangement relieves the State from any expense for material, and the pupils retain all the advantage of learning the trade under his instruction.

The consumption of fuel, amounting to nearly $7,000 per annum, admonishes us that too much care cannot be used in the management of our heating apparatus.

Respectfully submitted,

H. E. BARRON, Steward.

TREASURER'S REPORT.

Herewith is respectfully submitted the Treasurer's report for the years 1883 and 1884, for the Institute for the Deaf and Dumb and Blind, and the School for Idiots and Imbeciles:

1882.		
Dec. 11,	To cash balance forward from 1882	$2,685 25
1883.		
Feb. 18,	To cash from State Treasurer	4,548 23
March 6,	To cash from State Treasurer	6,311 56
March 6,	To cash from State Treasurer	5,104 33
M'ch 22,	To cash from State Treasurer	4,716 82
April 12,	To cash from State Treasurer	4,795 23
May 17,	To cash from State Treasurer	3,946 22
June 14,	To cash from State Treasurer	3,724 31
July 17,	To cash from State Treasurer	1,401 53
	To cash from H. E. Barron, Steward	2,412 65
Sept. 18,	To cash from State Treasurer	3,598 36
Oct. 15,	To cash from State Treasurer	5,519 62
Nov. 21,	To cash from State Treasurer	6,970 78
Nov. 28,	To cash from State Treasurer	1,342 94
Dec. 15,	To cash from State Treasurer	6,253 10
1884.		
Jan. 18,	To cash from State Treasurer	5,683 05
Feb. 21,	To cash from State Treasurer	5,927,75
M'ch 14,	To cash from State Treasurer	4,940 14
April 19,	To cash from State Treasurer	4,032 44
May 16,	To cash from State Treasurer	5,069 09
June 17,	To cash from State Treasurer	4,864 19
July 26,	To cash from State Treasurer	2,754 18
	To cash from H. E. Barron, Steward	2,926 69
		$99,528 46

EXPENDITURES FOR 1883 AND 1884.

1883	December vouchers rendered	$6,311 56
	January vouchers rendered	5,104 33
	February vouchers rendered	4,716 82
	March vouchers rendered	4,795 23
	April vouchers rendered	3,946 22
	May vouchers rendered	3,724 31
	June vouchers rendered	2,633 32
	July vouchers rendered	4,068 32
	August vouchers rendered	3,598 36
	September vouchers rendered	5,519 62
	October vouchers rendered	8,313 72
	November vouchers rendered	6,253 10
	December vouchers rendered	5,683 05
1884	January vouchers rendered	5,927 75
	February vouchers rendered	4,940 14
	March vouchers rendered	4,032 44
	April vouchers rendered	5,069 09
	May vouchers rendered	4,864 19
	June vouchers rendered	4,252 19
	July vouchers rendered	3,737 01
	Balance in hands of the Treasurer	2,037 69
		$99,528 46

BUILDING FUND.

EXPENDITURES.

1883	May vouchers rendered	$1,233 13
	June vouchers rendered	3,223 90
	July vouchers rendered	5,306 40
	August vouchers rendered	6,226 47
	September vouchers rendered	4,784 40
	October vouchers rendered	2,340 00
	December vouchers rendered	4,121 31
	December vouchers rendered	1,665 00
1884	January vouchers rendered	1,746 52
	February vouchers rendered	108 00
	March vouchers rendered	4,718 43
	April vouchers rendered	11 20
	May vouchers rendered	2,370 34
	June vouchers rendered	2,916 00
	July vouchers rendered	4,149 20
	August vouchers rendered	2,302 64
	Cash balance in hands of Treasurer	2,099 62
		$49,322 56

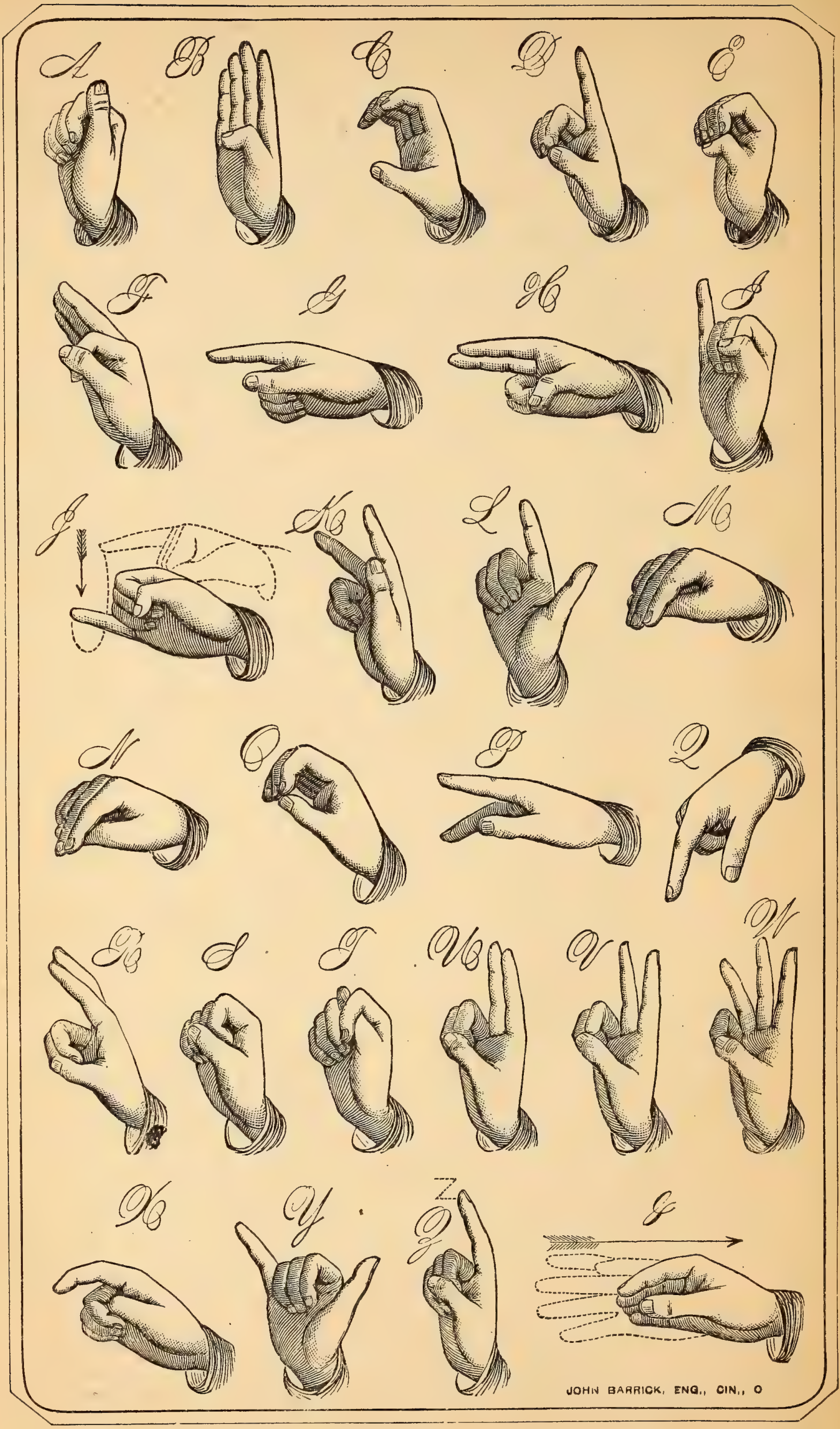
BUILDING FUND.

1883.		
	To cash balance forward from 1882	$6 38
May 11,	To cash from State Treasurer	2,000 00
June 12,	To cash from State Treasurer	6,000 00
July 16,	To cash from State Treasurer	5,000 00
1884.		
M'ch 31,	To cash from State Treasurer	2,000 00
Apr. 3,	To cash from State Treasurer	8,995 71
Apr. 3,	To cash from State Treasurer	4,426 47
May 27,	To cash from State Treasurer	4,500 00
May 27,	To cash from State Treasurer	4,394 00
June 9,	To cash from State Treasurer	2,000 00
July 5,	To cash from State Treasurer	5,000 00
Aug. 4,	To cash from State Treasurer	5,000 00
		$49,322 56

IMPROVEMENT FUND.

1883.			
M'ch 13,	By voucher No. 4 rendered		$1,000 00
	CR.		
	To amount received from State Auditor	$1,000 00	
		$1,000 00	$1,000 00

H. Wilson, Treasurer.



JOHN BARRICK, ENG., CIN., O

LIST OF PUPILS

IN THE MINNESOTA SCHOOL FOR THE DEAF, FROM ITS COMMENCEMENT TO THE PRESENT TIME — 1863 TO 1885.

EXPLANATIONS AND ABBREVIATIONS:
G — Graduated.
H D — Honorably Discharged.
V W — Voluntarily Withdrew.
I S — In School.

DEAF MUTE RELATIVES:
Fr — Father.
Mr — Mother.
Br — Brother.
Sr — Sister.
U — Uncle.
A — Aunt.
C — Cousin.
C 2 — Second Cousin.

NAME.	RESIDENCE.	COUNTY.	Admitted.		How Discharged		Cause of Deafness		Deaf Mute Relatives.	Parents Related.	Nationality of Parents.	Trade.	Remarks.
			Year.	Age	Manner	Year.	Cause.	Age					
Akkula, Elizabeth C.	Reads Landing	Wabasha	1881	11 yr	I S		Meningitis	2	None		German		Parents both dead.
Allen, George Henry	Chatfield	Fillmore	1873	9	G	1881	Scarlet fever	6	Br. partially		American	Printer	Entered college. Left on account of poor health.
Anderson, John	Norsland	Nicollet	1869	17	G	1876	Congenital				Swede	Cooper	Foreman cooper shop D. & D. Inst. one year.
Ashley, Julia Frances	Jackson	Jackson	1867	15	G	1875	Typhoid fever	10			American	Seamstress	Good Articulator.
Anderson Syvert C.	North Fork	Stearns	1882	14	I S		Scarlet fever	1½			Norwegian	Shoemaker	
Anderson, Sumner E.	Anoka	Anoka	1883	10	I S		Congenital		1 br. deaf.		American	Tailor	
Appel, Mary	Brownsville	Houston	1882	10	I S		Congenital				German	Seamstress	
Anderson, Thea	Albert Lea	Freeborn	1880	16	VW	1882	Brain fever	3½			Norwegian		
Barnes, Lizzie	Stillwater	Washington	1864	22	VW	1865	Brain fever	1	1 br				[6 yrs in Iowa Inst. [June 29, 1864. She was Married Perry Barnes, May 5, 1874, married Geo.E.Bronson of Ind.
Barnes, Anna	Dundas	Rice	1867	20	G	1869	Typhus fever	3			English		
Bahe, Chas. Fred. Wm.	Cottage Grove	Washington	1869	10	G	1876	Congenital				German	Shoemaker	
Berg, Axel Julius	Red Wing	Goodhue	1874	10	Died	1881	Ship fever	2			Swede	Printer	Died of meningitis, May 13, 1881.
Beltz, Frederick	Chaska	Carver	1875	10	H D	1883	Scarlet fever	2½			German	Tailor	
Becker, Francis Joseph	Wabasha	Wabasha	1876	13	VW	1881	Cold in head	1	1 br. & 1 sr.		German-Irish	Shoemaker	
Becker, Margaret W.	Wabasha	Wabasha	1879	13	VW	1882	Congenital		2 br.		German-Irish	Seamstress	
Bentley, Nora M.	Pleasant Grove	Olmsted	1882	10	I S		Congenital				American		
Benz, August Edward	Delano	Wright	1874	10	H D	1882	Congenital				German	Cooper	
Betcher Emma	Carver	Carver	1879	15	I S		Congenital				German	Seamstress	
Bergwall, Sigrid Brita	Stark	Chisago	1876	10	G	1884	Scarlet fever	1½	1 sr. pr. deaf	C. 2.	Swede	Dressmaker	
Bjorlee, Johan E.	Albert Lea	Freeborn	1878	13	I S		Congenital		1 br	C.	Norwegian	Cooper	
Bjorlee, Syver E.	Albert Lea	Freeborn	1878	10	I S		Congenital		1 br	C.	Norweigan	Tailor	
Bossard, Daniel Sherman	Eagle Lake	Blue Earth	1874	9	VW	1879	Brain fever	8 ms			American	Shoemaker	
Bowen, James Samuel S.	Minneapolis	Hennepin	1883	12	I S		Meningitis	9½y			English	Printer	
Bouska, Katie	St. Paul	Ramsey	1884	16	I S		Congenital			C. 2.	Bohemian		
Brachtner, Mary	St. James	Watonwan	1877	13	VW	1884	Nervousness	1		C. 3.	Hungarian	Seamstress	
Brower, Walter Cary	Little Sauk	Todd	1877	24	G	1879	Meningitis	18			American	Printer	Editor and propr. Sauk Centre Tribune. Married a hearing lady.
Branch Catherine	Luxemburgh	Stearns	1875	15	VW	1876	Congenital				German		
Brack, Alexander Way	St. Paul	Ramsey	1884	11	I S		Scarlet fever	5			English	Printer	

LIST OF PUPILS. — *Continued.*

Name.	Residence.	County.	Admitted.		How Discharged.		Cause of Deafness.		Deaf Mute Relatives.	Parents Related.	Nationality of Parents.	Trade.	Remarks.
			Year.	Age	Manner	Year.	Cause.	Age					
Brant, Frederick	St. Paul	Ramsey	1883	13yr	I S		Meningitis	3½			American	Printer	
Bollinger, Adolph	St. Paul	Ramsey	1880	12	I S		Brain fever	1½			Swiss	Shoemaker	
Braf, Frank Michael	Fish Lake	Chisago	1873	12	G	1881	Scarlet fever	8ms			Swede	Cooper	
Bryan, Anna Bell	Winona	Winona	1869	12	trial 6 w	1869	Congenital				Irish		Feeble-minded.
Brackett, Mary Emma	Minneapolis	Hennepin	1865	17	V W	1875	Measles	2½			American		
Branan, James H	St. Paul	Ramsey	1863	12	V W	1868	Brain fever	1½			Irish		
Burgh, Adolph Christian	Red Wing	Goodhue	1868	10	G	1874	Spotted fever	6			Norwegian	Cooper	Married D. and D.
Buschmann, Louis J	St. Paul	Ramsey	1872	12	H D	1879	Brain fever	1			German	Shoemaker	
Burgett, John Woodson	Island Lake	Lyon	1876	13	V W	1880	Nervousness	1⅓			American	Shoemaker	
Carroll, Thomas J	Rochester	Olmsted	1865		V W	1866					Irish		6 years in Am. Asylum.
Carr, Loretta	Lakeville	Dakota	1868	17	H D	1877	Congenital		2 c. 1st pr. d.		American	Tailoress	
Cardwell, Rachel Mary	Hyde Park	Wabasha	1870	15	tr few m	1871	Whoop'g cough	1½	Aunt d. & d.		Irish		Feeble-minded.
Cartee, Mabel	Minneapolis	Hennepin	1880	17	I S		Brain fever	4			American	Seamstress	5 terms in Ill. Inst. for D. and D.
Carver, Ralph H	Beardsley	Big Stone	1882	10	I S		Ac. rheumatism.	8ms			American		
Chilson, Harriet R	Minneapolis	Hennepin	1869	26	V W	1870	Congenital				American		Married A. Nilson, D. & D., Aug. 18, 1872.
Cluky, Ellen Martha	Rocky Run	McLeod	1873	14	G	1881	Lung fever	9ms	1 c		Fr.-American	Seamstress	
Cluky, Philomena	Rocky Run	McLeod	1873	18	V W	1877	Unknown	3	1 c		French	Seamstress	
Clark, A. Edward	Evanston	Cook, Ill.	1883	23	trial 5 m	1884	Convulsions	2			American		Feeble-minded.
Cooper, Wm. E	Faribault	Rice	1863	11	H D	1870	Congenital		Pts. pr. d.		American		
Cosgrove, Martin	Northfield	Rice	1867	14	G	1874	Scarlet fever	9			Irish	Cooper	Died suddenly of Spotted Fever at Washington College, D. C., in 1878.
Coffey, Catherine	Shieldsville	Rice	1868	13	G	1875	Cold in head	2½			Irish	Dressmaker	Married C. Byrnes of Faribault, D. and D.
Cole, Florence Arabella	Minneapolis	Hennepin	1868	11	G	1875	Scarlet fever	3½			American	Dressmaker	Married October 23, Lee Dane, D. and D.
Coulthart, Nancy	Dundas	Rice	1868	10	H D	1875	Sores in head	5ms	C. 3d 1		Scotch Am.	Seamstress	
Corrigan, John	Inver Grove	Dakota	1870	11	G	1877	Brain fever	3¼			Irish	Farmer	
Collins, William Alonzo	Shelbyville	Blue Earth	1873	11	V W	1874	Congenital				English		Feeble-minded.
Cooper, Leonard Leader	Dover Centre	Olmsted	1873	10	G	1882	Brain fever	2½			Irish	Shoemaker	
Cowles, William Henry	Minneapolis	Hennepin	1874	14	V W	1878	Typhoid fever	7			American	Clerk	
Cole, Christian S	Swedes Forest	Redwood	1876	14	Died.	1878	Scarlet fever	2			Norwegian	Cooper	Died Aug., 1878, at home.
Corteau, Elmina Z	St. Paul	Ramsey	1877	10	I S		Nervousness	1½			French	Seamstress	
Converse, George E	Hatfield	Pipe Stone	1881	10	I S		Meningitis	10			American	Printer	
Coyle, Eddie	Louriston	Chippewa	1883	12	I S		Congenital				Irish-American	Shoemaker	
Cramer, Jennie C. C	Sumner	Freeborn	1868	10	G	1875	Brain fever	5½	1 c. pr. d.		American	Dressmaker	Teacher in Minn. 3 yrs. in Ia. 3 yrs. Died Oct. 18, 1884. 26½ yrs. old.
Crawford, Josephine L.	Faribault	Rice	1879	21	G	1881	Hereditary		Mr. pr. d.		American	Printer	Printer and contributor to a paper in Colorado.

Crane, George E.	Mantorville	Dodge	1868	10	G	1875	Ty. pneumonia				American	Cooper	Farming at home.
Davis, Geo. Washington.	Waseca	Waseca	1868	10	V W	1869	Congenital				American		Father left State in 1869
Dahlke, Bertha	Hokah	Houston	1882	16	I S		A fall	5	1 A. pr. deaf		German		A good articulator.
Danz, George	St. Paul	Ramsey	1871	14	H D	1876	Congenital				German		Died at home Aug. 6, '82.
Dallas, Susan Jane	Clearwater	Wright	1874	9	Died	1875	Cold in head	8 ms			American-Irish.		Died at home of Diptheria,
Dam, Bertoline C.	Albert Lea	Freeborn	1883	9	I S		Congenital		3 C.1st & 1 sis		Dane		Sept. 8, 1875.
Dam, Maren	Albert Lea	Freeborn	1 83	16	I S		Congenital		3 C.1st & 1 sis		Dane		[Oct. 23, 1879.
Dean, Wm. Edward	Minneapolis	Hennepin	1868	13	G	1875	Scarlet fever	4			American	Clerk in bank	Married E. Clapp, D. & D
De Curtins, Joseph	Stillwater	Washington	1869	11	G	1876	Congenital				German	Tailor	Married Clara A. Doyle,
Devitt, James D.	St. Paul	Ramsey	1879	9	I S		Meningitis	3			Irish	Tailor	D. and D.
Dehler, John George	St. Paul	Ramsey	1873	10	G	188	Measles	2			German	Tailor	
Doyle, John Joseph	Marysburgh	Le Sueur	1868	12	G	1876	Congenital				Irish	Cooper	Farming and caring for
Dodge, Charles H. H.	Spring Valley	Fillmore	1867	10	I S		Scarlet fever	5			American	Tailor	his mother.
Dougherty Eliakim	Bethel	Anoka	1867	13	V W	1882	Congest'n brain.	9			Canadian	Shoemaker	
Drought, Ralph H.	Owatonna	Steele	1877	10	I S		Meningitis	3			Canadian	Printer	
Durose, Wm. Sherman	Stillwater	Washington	1868	13	H D	1875	Congenital				German	Cooper	
Dougherty, George	Fountain	Fillmore	1874	10	H D	1883	Congenital				English-Amer	Shoemaker	[D. and D.
Doyle, Clara Ann	Victor	Wright	1874	12	G	1882	Inflama'n brain	2			American	Dressmaker	Married J. De Curtins,
Edwards, William P.	Minneapolis	Hennepin	1881	13	Died	1883	Fall	1½			English-Amer		Died at home.
Ellis, Theodore N.	Fillmore	Fillmore	1871	16	G	1878	Sores in head	3			American	Shoemaker	
Elliott, Martha Jane	Etter Station	Dakota	1879	10	I S		Meningitis	5			American	Seamstress	
Erickson, Anna	Spencer Brook	Isanti	1874	10	G	1882	Scarlet fever	1½			Swede	Seamstress	
Estenson, Nils	Norsland	Nicollet	1868	13	H D	1875	Congenital				Norwegian	Cooper	
Erickson, Charles	Minneapolis	Hennepin	1874	12	V W	1875	Brain fever	6 ms			Dane		Feeble-minded.
Ekberg, Albert	Litchfield	Meeker	1882	14	I S		Congenital				Norwegian	Tailor	
Engler, Emma D.	Chaska	Carver	1882	10	I S		Convulsions	6 ms			German		
Farr, Wm. Leonard	Moscow	Freeborn	1868	14	H D	1876	Fall	2			American	Cooper	
Field, Sievart	Sacred Heart	Renville	1880	20	I S		Congenital		1 br.	1st Cs.	Norwegian	Tailor	
Fitzpatrick, Mary	Rochester	Olmsted	1873	10	I S		Lung fever	4			Irish	Seamstress	
Filiatrault, Joseph	Faribault	Rice	1872	10	H D	1879	Sores in head	1			Fr.-Canadian	Tailor	
Fischback, Frank John.	Cold Spring	Stearns	1883	11	I S		Scarlet fever	2			German-Amer		
Fletcher, Nattie B.	Rochester	Olmsted	1865	23	V W	1866	Fall	1			American		Six years in New York
Flanagan, James H.	St. Paul	Ramsey	1880	10	I S		Meningitis	2½			Irish	Shoemaker	Inst.
Flynn, John P.	Carimona	Fillmore	1881	10	I S		Meningitis	3 ms			Irish	Tailor	
Fox, Edward	Eau Claire	Eau Claire Wis	1874	13	V W	1875	Congenital				American		Feeble-minded.
Frick, Bertha	Watertown	Carver	1875	12	G	1884	Fever on brain.	2¼			German	Dressmaker	[boys' supervisor.
Fried, Anna W.	Chisago Lake	Chisago	1865	10	H D	1872	Scarlet fever	1			Swede	Seamstress	[ploy of the Inst. as
Gage, Theron Thompson	Winona	Winona	1873	13	G	1882	Diphtheria	1½	1 br, 1 sis&1c	Cs. 3.	American	Shoemaker	Two years in the em-
Gates, Euvertia E.	Excelsior	Hennepin	1879	24	V W	1880	Scarlet fever	8	1 br. pr. deaf		American		Several years in New York Inst.
Gage, Myra Louisa	Winona	Winona	1880	10	I S		Teething		2 brs. & 1 c.	Cs. 3.	American		
Galvin, Katie	Morris	Stevens	1881	10	I S		Brain fever	8 ms			Irish		
Gale, William S.	Hamline	Ramsey	1883	10	I S		Scarlet fever	1½			American		
Gloeser, Katherine E. L.	St. Paul	Ramsey	1880	10	I S		Meningitis	3			German		
Graf, Mary	Watertown	Carver	1870	11	V W	1875	Brain fever	1½			German	Seamstress	
Goolsby, Alexander C.	Geneva	Freeborn	1870	10	Tri'l 4 m		Brain fever	4			American		Feeble-minded.
Griswold, Charles	Victor	Wright	1870	20	V W	1871	Lung fever	3			German		School three years in
Griffin, John Edward	Winona	Winona	1872	10	H D	1879	Brain fever	1		Cs. 3.	Irish	Tailor	Indiana Inst.

LIST OF PUPILS. — *Continued.*

Name.	Residence.	County.	Admitted.		How Dschgd		Cause of Deafness.		Deaf Mute Relatives.	Parents Related.	Nationality of Parents.	Trade.	Remarks.
			Year.	Age	Manner.	Year.	Cause.	Age					
Graham, Mary Ella	Minneapolis	Hennepin	1875	10 y	G	1884	Meningitis	6			American	Seamstress	Good articulator.
Grindahl, Gunerius O.	Zumbrota	Goodhue	1884	10	I S	......	Convulsions	6 ms			Norwegian		
Gran, Katie A.	Elk Lake	Grant	1882	10	I S	......	Congenital	......			Norwegian		Out one year.
Guptill, Wilbert	Maine Prairie	Stearns	1872	22	V W	1874	Convulsions	1 yr.			American		
Gunderson, Ole	Faribault	Rice	1873	11	G	1880	Congenital	......	1 br. & 2 cs.	C. 2	Norwegian	Tailor	
Gunderson, Edward	Faribault	Rice	1873	9	G	1584	Congenital	......	1 br. & 2 cs.	C. 2	Norwegian	Tailor	Out two years, returned [and graduated 1884.
Gulickson, Margaret	Sacred Heart	Renville	1881	30	V W	1884	Congenital	......	1 br		Norwegian		Two years in Iowa Inst.
Gulickson, Gulik	Sacred Heart	Renville	1881	33	V W	1884	Congenital	......	1 sr		Norwegian		Two years in Iowa Inst.
Gulickson, Anna	Adams	Mower	1883	11	I S	......	Congenital	......			Norwegian		
Harmon, George A.	Dodge City	Steele	1863	13	G	1870	Sores in head	1			American	Cooper	Married hearing lady [Oct. 26, 1875; have two [children.
Harris, John	St. Paul	Ramsey	1864	17	V W	1868	Sores in head	1			Irish	Printer	Three years in Wis. Inst; 1873 married L. W. Houghton, D. and D.; have two children.
Harty, Michael	Berlin	Steele	1868	12	H D	1875	Scarlet fever	1			Irish	Cooper	He is dead.
Hardy, Ellen Maria	Minneapolis	Hennepin	1868	18	V W	1870	Sores in head	6			American		Oct. 8, 1870, married Frank A. Stenberg, D. and D.
Halvorson, Julia	Willmar	Kandiyohi	1872	10	G	1880	Brain fever	1½			Norwegian	Dressmaker	Sept. 10, 1884, married A. R. Spear, semi-mute.
Haggard, Newton	Worthington	Nobles	1873	17	V W	1879	Scarlet fever	4½	1 A.		American	Shoemaker	Out one year.
Hartnagel, Arthur E.	St. Paul	Ramsey	1873	13	H D	1881	Sores in head	1			German	Cooper	
Hanson, Pauline O.	Morris	Stevens	1877	18	H D	1884	Inflm. of brain	6 ms			Norwegian	Seamstress	
Hanson, Olof	Willmar	Kandiyohi	1878	16	G	1881	Ap'rntly no c'se	12	U partially		Swede	Printer	In college at Washington, D. C.
Hanson, John	Rushford	Fillmore	1878	10	V W	1883	Congenital	......	1 sr		Norwegian	Shoemaker	
Halverson, Edward	Aurora	Steele	1879	16	I S	......	Ague	4½			Norwegian	Cooper	
Hauenstein, Robert	New Ulm	Brown	1872	10	H D	1879	Convulsions	9 ms			German		
Hennrichs, Henrich	Helena	Scott	1870	20	V W	1873	Brain fever	9 ms	F. very D.		German	Cooper	Foreman of cooper shop at Jordan.
Hews Joseph,	Owatonna	Steele	1870	14	H D	1877	Congenital	......	2 d & d bs&sis		American	Shoemaker	
Henderson, George V	Faribault	Rice	1878	11	V W	1884	Scarlet fever	......	1 s partially		American	Shoemaker	
Hennessey, John	Minneapolis	Hennepin	1881	16	I S	......	Teething	2			Nova Scotian	Cooper	
Helgeson, Margaret	Sacred Heart	Renville	1881	11	I S	......	Brain fever	1			Norwegian		
Helmich, George O	Carman	Pope	1882	10	I S	......	Meningitis	1			German		
Heimsath, Mary Minnie	St. Cloud	Stearns	1882	14	I S	......	Typhoid fever	2			German		

enry, Amiel Albert	Millville	Wabasha	1884	10	I S		Congenital				German		
Hill, William	St. Paul	Ramsey	1879	12	I S		Congenital				Irish	Cooper	
Houde, Maria E	St. Paul	Ramsey	1876	10	V W	1883	Congenital				French Canad'n		
Howe, Cora Agnes	Plymouth	Hennepin	1863	16	G	1870	Scarlet fever	2½			American		
Houghton, Laura W	Big Lake	Sherburne	1864	14	G	1872	Scarlet fever	2			American		Married J. Harris, of St. Paul, 1873, both D.&D.
Howe, Mary Jane	Rochester	Olmsted	1864	14	V W	1869	Brain fever	3			American	Seamstress	
Hoyt, Martha	Medford	Steele	1872	10	H D	1879	Dropsy on brain	1			American		
Holton, Grant	Corra	Olmsted	1879	10	I S		Congenital		1 br		American		
Hoy, Ella	Minneapolis	Hennepin	1880	13	V W	1884	Meningitis	9 m.			Irish		Feeble-minded.
Holm, Joseph	New Ulm	Brown	1881	13	I S		Congenital			C	German	Cooper	
Howard, Jay Cooke	Duluth	St. Louis	1882	10	I S		Meningitis	8¾			American	Printer	Good articulator.
Hutchinson, John Chas.	Dundas	Rice	1871	15	G	1877	Scarlet fever	2½	1 c		American	Printer	Good articulator.
Humble, Gustav H	Winona	Winona	1883	23	I S		Nervousness	1			German	Shoemaker	
Hodgman, Leonard W	Red Wing	Goodhue	1873	10	V W	1882	Meningitis	9 m.			American	Printer	Under private instruction. A fair articulator.
Johnson, Augusta C	Red Wing	Goodhue	1870	13	V W	1875	Typhoid fever	1			Swede	Seamstress	
Jay, William Howard	Minneapolis	Hennepin	1884	10	I S		Congenital				American		
Jenks, Ada	Lake City	Wabasha	1872	11	Died.	1875	Congenital				American		From effects of a fall on lawn. Died 1875.
Johnson, David Edward	Watertown	Carver	1875	10	V W	1877	Convulsions	9 m.			Swede		
Johnson, Martha M	Vernon	Dodge	1876	12	V W	1884	Fall	2			Norwegian		
Johnson, Sarah G	New Ulm	Brown	1878	14	V W	1882	Scarlet fever	3			Norwegian		
Johnson, Clara L	Rushford	Fillmore	1882	11	I S		Congenital				Norwegian		
Johnson, Anna	Minneapolis	Hennepin	1882	10	I S		Scarlet fever	1½			Norwegian		
Just, Frederick	Rapidan	Blue Earth	1876	30	V W	1879	Brain fever	4		C	German	Cabinetmaker	
Kell, Thomas	Bloomington	Hennepin	1863	18	V W	1864	Fever on brain	3			German		
Kelley, Jeremiah	Stewartville	Olmsted	1870	12	G	1876	Inflam. of brain	7	C. blind		Irish	Cooper	College graduate. Good articulator. Teacher at Faribault.
Kennelly, Mary	Madelia	Watonwan	1882	12	I S		Measles	4			Irish		
Kittleson, Gunnill	Wegdal	Chippewa	1872	27	V W	1872	Congenital				Norwegian		
Klagge, Frederick E	Winona	Winona	1881	22	I S		Scarlet fever	2			German	Printer	
Kuske, Robert	Rush River	Sibley	1874	12	G	1882	Typhoid fever	3			German	Shoemaker	Works on farm at home.
Lampmann, Douglas	Alexandria	Douglas	1869	10	V W	1876	Measles	3			American	Shoemaker	
Lampmann, Mary Jane	Waterville	Le Sueur	1874	13	Trial 6 m.	1874	Measles and fits	5 m.	1 br		American		Feeble-minded.
Larson, Lars	Evansville	Douglas	1875	21	H D	1883	Congenital				Norwegian	Shoemaker	
Lang, Daniel Webster	Minneapolis	Hennepin	1876	12	V W	1881	Paralysis	3½	1 br. blind		American		1 term in Ontario Inst.
Laubby, Fred. Theodore	Duluth	St. Louis	1883	11	I S		Congenital		2 srs		Norwg'n-Swede		
Laubby, Frida Amelia	Duluth	St. Louis	1883	10	I S		Congenital		2 brs. & 1 sr.		Norwg'n-Swede		
Launston, Martha	Roscoe	Goodhue	1883	10	I S		Brain fever				German		
Landkammer, Andrew	Mankato	Blue Earth	1882	11	I S		Congenital				German		
Larson, Charles T	Minneota	Lyon	1881	8	I S		Congenital				Norwegian		
Lajord, Mary	Holden	Goodhue	1881	10	I S		Congenital				Norwegian		
Law, Mary F	Stillwater	Washington	1880	10	I S		Meningitis	1⅓			Scotch-Swiss		
Le Fever, Leon	Spring Valley	Fillmore	1873	9	G	1882	Meningitis	8			French-Amer'n	Printer	
Leithner, Erank	Minnesota City	Winona	1876	11	V W	1881	Teething	6 m.			German		Father left the State.
Lifquist, Olof	Wadena	Wadena	1876	14	V W	1881	Brain fever	4			Swede	Cooper	
Lukins, Eddie	Albert Lea	Freeborn	1878	12	Trial 6 m.	1879	Dropsy on brain	6 m.			American		Feeble-minded.
Lyon, Grace Lee	Rochester	Olmsted	1882	12	I S		Scald head	1			American		
Lynch, Lawrence	Gentilly	Polk	1883	11	I S		Scarlet fever	1			Irish		
Martin, William	Watertown	Carver	1864	14	V W	1869	Congenital		2 brs		American		Married, 1873, Mary Torry, D. & D.
Maze, Sarah J	Wilton	Waseca	1864	10	V W	1868	Typhoid fever	1½			American		

LIST OF PUPILS.—*Continued.*

Name.	Residence.	County.	Admitted.		How Discharged		Cause of Deafness.		Deaf Mute Relatives.	Parents Related.	Nationality of Parents.	Trade.	Remarks.
			Year.	Age	Manner	Year.	Cause.	Age					
Mann, John J	Caledonia	Houston	1866	10	H D	1873	Sores in head	2 ys			Irish	Cooper	Practical farmer.
Martin, John	Watertown	Carver	1866	10	G	1874	Congenital		2 brs.		American	Cooper	1882 married Julia Salonick, D. & D.
Malone, Johanna	Stillwater	Washington	1870	17	Trial 1 mo	1870	Congenital				Irish		Feeble-minded.
Madden, Emma	Henderson	Sibley	1873	10	G	1871	Brain fever	3			Irish-American	Seamstress	
Maloney, Minnie	Enterprise	Winona	1880	10	I S		Meningitis	1			Irish-English		
Madden, Lucy	Minneapolis	Hennepin	1881	10	V W	1882	Meningitis	1	C. 2		Irish		Left the State in 1882.
Manly, James	Rushford	Fillmore	1882	11	I S		Brain fever	1			Irish		
Marshal, Horace Wm.	Portland, Ore.		1884	7	I S		Congenital				American		[Have 1 child.
Mattson, Andrew G	Minneapolis	Hennepin	1884	10	I S		Scarlet fever	2			Swede		[James Thorn, D. & D.
McGraw, Elizabeth	Rochester	Olmsted	1869	10	G	1876	Typhoid fever.	3			Irish	Dressmaker	Married, April 22, 1878,
McCormick, Budda	Winona	Winona	1879	12	V W	1883	Congenital				Irish		Feeble-minded.
McNeely, Edward P	Faribault	Rice	1881	10	I S		Meningitis	2			Irish		
McNeill, John	W. St. Paul	Dakota	1882	10	I S		Meningitis	3			Scotch-Irish		
McRay, James D	De Graff	Swift	1877	10	I S		Brain fever	2½			Irish		
Meade, Margaret	Belle Plaine	Scott	1873	10	G	1881	Congenital		2 brs. & 1 sr.		Irish	Dressmaker	Mother hard of hearing.
Meade, James	Belle Plaine	Scott	1873	9	H D	1880	Congenital		2 srs. & 1 br.		Irish	Cooper	Mother hard of hearing. Farming at home.
Meade, John	Belle Plaine	Scott	1878	11	I S		Congenital		2 srs. & 1 br.		Irish	Tailor	Mother hard of hearing.
Meade, Mary Jane	Belle Plaine	Scott	1880	10	I S		Congenital		2 brs. & 1 sr.		Irish		Mother hard of hearing.
Merrill, Herbert	Waseca	Waseca	1883	11	I S		Scarlet fever	3½			American		Good articulator.
Meekins, Henry W	Lake City	Wabasha	1883	12	I S		Scarlet fever	13m	C 2		German		
Miller, Carl A	Wren	Chippewa	1879	11	V W		Brain fever	2 ys			Norwegian	Shoemaker	
Morrisette, David	Little Canada	Ramsey	1864	15	H D	1871	Congenital				French		
Morris Mary Ann	Medford	Steele	1880	24	I S		Dropsy on brain	3			English		
Moxley, Robert W	Minneapolis	Hennepin	1882	14	I S		Meningitis	12			English		
Morse, Morell N	E. Prairieville	Rice	1864	10	V W	1865	Dropsy	3			American		Weak-minded. Parents left State 1865.
Mueller, Martha	New Ulm	Brown	1880	12	I S		Fever on brain.	5			German		
Nass, Wm. F.	Hutchinson	McLeod	1868	10	H D	1875	Congenital				German	Cooper	
Neumann, August	St. Paul	Ramsey	1872	15	G	1879	Typhoid fever.	2			German	Cooper	
Neeser, Gottleib	W. St. Paul	Dakota	1875	10	G	1884	Inflam. of brain	1			Swiss	Tailor	
Nilson, Andrew	Scandia	Carver	1864	20	H D	1870	Congenital		1 br.	C.	Norwegian	Cooper	Aug. 18, 1872, married H. Chilson, D. & D. Have 2 children. A farmer.
Nilson, Nils	Scandia	Carver	1864	12	H D	1872	Congenital		1 br.	C.	Norwegian	Cooper	
Nillson, Mary S	Bratsberg	Fillmore	1869	13	H D	1876	Congenital				Norwegian	Seamstress	
Norling, Olof Olson	Willmar	Kandiyohi	1873	14	G	1881	Congenital				Swede	Cooper	Tutor in Inst. 2 years.
Norton, Emma	Dryden	Sibley	1881	10	I S		Brain fever	4			German		

O'Brien, John	Rochester	Olmsted	1873	12	V W	1883	Meningitis	6			Irish	Shoemaker	Out three years, on account of sickness.
O'Connor, Patrick	St. Paul	Ramsey	1884	10	I S		Cold in head	1½			Irish		
Ochs, Willhelm	New Ulm	Brown	1880	19	I S		Typhoid fever	9		C.	German	Printer	Good articulator.
Olson, Ole K.	Rushford	Fillmore	1873	17	V W	1880	Congenital				Swede	Shoemaker	Health failed.
Olson, John Edward	Brush Prairie	McLeod	1877	12	V W	1882	Scarlet fever	5			Norwegian		
O'Leary, James H.	Delano	Wright	1880	10	I S		Brain fever	1¼			Irish		
Oryall, Ella M.	Minneapolis	Hennepin	1880	10	I S		Scarlet fever	6			Eng.-American		
O'Riley, Michael J.	Wabasha	Wabasha	1868	10	H D	1875	Congenital		1 B.		Irish	Cooper	
O'Riley, David J.	Wabasha	Wabasha	1868	10	H D	1875	Congenital		1 B.		Irish	Shoemaker	Died at home, March 20, 1876.
Oraas, Anna H.	Stavanger	Yel. Medicine	1881	10	I S		Congenital				Norwegian		
Ormes, Clifford C H	St. Paul	Ramsey	1883	11	I S		Catarrh		C.		American		
Oskerson, Betsey	Kenyon	Goodhue	1874	20	H D	1882	Congenital				Norwegian	Dressmaker	
Palmer, Chester A.	Janesville	Waseca	1880	10	I S		Meningitis	1½			American	Tailor	
Palmer, Byron H.	Austin	Mower	1880	22	Trial2w		Paralysis				American		
Patenande, Mary A.	Red Lake Falls	Pope	1881	10	I S		Scarlet fever	1	Grandpar'ts	C 2	Fr.-Canadian		
Peterson, Emily A.	Clitherall	Otter Tail	1872	10	G	1880	Cold in head	1½			Swede	Seamstress	
Peachar, Phillip B.	Stillwater	Washington	1877	12	I S		Scarlet fever	1¼			Canadian	Shoemaker	
Peterson, Pauline	Warner	Kandiyohi	1881	14	I S		Convulsions	1½			Norwegian		
Peterson, Maria A.	Franconia	Chisago	1882	10	I S		Scrofula	1½			Swede		
Perry, Emma	Minneapolis	Hennepin	1882	16	I S		Meningitis	7			Canadian		In school, Montreal, five terms.
Peterson, Peter John	Minneapolis	Hennepin	1882	13	I S		Congenital				Swede		
Pfeifer, Maria	Okaman	Waseca	1873	13	H D	1880	Inflam. of brain	3½			Bohemian		In school, Prague, Bohemia, twelve mos.
Phillips, Christina	Minneapolis	Hennepin	1882	11	V W	1884	Convulsions	1			Bohemian		Left State in 1884.
Pherson, Ingra	Roscoe Centre	Goodhue	1882	10	I S		Congenital				Norwegian		[children.
Pierce, Ann Eliza	Mankato	Blue Earth	1881	11	I S		Meningitis	1⅔	C.		American		[Scofield; have two
Pietrowski, Josephine	St. Paul	Ramsey	1865	15	G	1872	Fall	1			Pole	Seamstress	Married, May 2, 1878, C
Plocher, Gottfried	Chaska	Carver	1868	20	Trial2m		Congenital				German		Feeble-minded.
Popki, Joseph	Faribault	Rice	1880	23	H D	1883	Scarlet fever				Pole	Carpenter	Working at his trade in St. Paul.
Porter, Maude	Amiret	Lyon	1880	10	Died.	1880	Congenital			C.	American		In school one day.
Pooch, Frank L.	Lamberton	Redwood	1884	15	I S		Scarlet fever	4½			German		
Quinlan, Mary Ann	Rochester	Olmsted	1870	13	H D	1877	Scarlet fever	6mo			Irish	Seamstress	Married Mr. Evanston, in 1877, D. and D; died in 1878; one child.
Raxeisen, Mary	St. Paul	Ramsey	1862	11	I S		Congenital				German		
Randel, Leroyd	Lenora	Fillmore	1868	11	V W	1874	Cold in head	1	1 br.		American		
Rand, Mary Elizabeth	Claremont	Dodge	1878	10	I S		Congenital		1 br		Amer.-Scotch		
Rand, Joseph B.	Claremont	Dodge	1879	9	I S		Congenital		1 sr		Amer.-Scotch		
Rafter, Wm. James	Minneapolis	Hennepin	1884	13	I S		Sores in head	1		C.	Canadian		
Reed, Mabel	St. Paul	Ramsey	1882	15	V W	1884	Scarlet fever	6			American		Left the State in 1884.
Riley, John F.	Amiret	Lyon	1880	17	G	1881	Meningitis	8			Irish	Shoemaker	In Wis. Inst. seven yrs.
Robert, Marshall O.	North Branch	Chisago	1875	19	G	1878	Typhoid fever	16			American	Tailor	Good articulator; in public schools 12 mos; clerk in Washington.
Roth, Louis	Faribault	Rice	1881	10	I S		Congenital				German	Printer	
Rodney, Mary	Wabasha	Wabasha	1880	10	I S		Meningitis	3			Irish		Out one year, sickness.
Roasberry, John	Albert Lea	Freeborn	1881	10	I S		Meningitis	9mo			French-Irish		
Russell, Abby Maria	Faribault	Rice	1874	13	V W	1875	Sores in head	3			American		A good articulator; left the State in 1875.
Ryan, James W.	Fountain	Fillmore	1881	10	I S		Scarlet fever	1			Irish		

LIST OF PUPILS. — *Continued*

Name.	Residence.	County.	Admitted.		How Discharged.		Cause of Deafness.		Deaf Mutes Related.	Parents Related.	Nationality of Parents	Trade.	Remarks.
			Year.	Age	Manner	Year.	Cause.	Age					
Ryan, Michael	Rochester.	Olmsted	1877	18	H D	1879	Measles	2			Irish	Shoemaker	In Delevan school 5 yrs
Sachs, Anna	New Ulm	Brown	1873	14	G	1880	Scarlet fever	7			German	Seamstress	Fair articulator.
Sachs, Sophia	New Ulm	Brown	1873	10	V W	1879	Scarlet fever	4			German	Seamstress	Fair articulator. Married a hearing man.
Salonick, Julia	Delano	Wright	1876	15	V W	1881	Congenital		3 C		German	Seamstress	Married, 1882, John Martin, D. and D.
Sampson, Edward	Minneapolis	Hennepin	1882	13	I S		Scarlet fever	2			French		
Sadowski, Pauline	Winona	Winona	1884	22	I S		Brain fever	5	Sr		Pole		
Sentell, John B.	Faribault	Rice	1883	15	V W	1866	Congenital				American		Feeble-minded.
Sexton, Mary Jane	Janesville	Waseca	1874	14	H D	1882	Cold in head	3m			Irish	Dressmaker	
Schneider, Emma H	Albert Lea	Freeborn	1871	10	G	1878	Scarlet fever	8	2 C. and br.		German	Seamstress	Good articulator.
Schellbach, Hermann	Lyle	Fillmore	1869	13	V W	1872	Congenital				German		
Schwirtz, John	Wabasha	Wabasha	1876	10	G	1884	Meningitis	7			German	Printer	Good articulator.
Schroeder, Anthony	St Paul	Ramsey	1877	10	I S		Brain fever	4	Fr. hard of hearing.		German	Cooper	
Schreyer, Herman	New Ulm	Brown	1880	10	I S		Convulsions	1			German		
Scharmer, Ida	Green Isle	Sibley	1883	16	I S		Fall	1			German		
Shaw, Abigail	May	Martin	1868	10	H D	1876	Scrofula	2			American	Seamstress	Out one year.
Shay, Mary A	Waseca	Waseca	1873	21	V W	1875	Meningitis	16			Irish		Good articulator.
Shanks, Harper A	Fairmont	Martin	1875	10	G	1884	Inflam. of brain	1			American	Shoemaker	
Shanisey, John F	Plainview	Wabasha	1878	11	I S		Meningitis	6			Irish-Scotch	Cooper	Fair articulator.
Shaw, Sampson J	Adams	Mower	1882	20	V W	1883	Scarlet fever	10			Norweg an	Carpenter	Good articulator.
Sheridan, Thomas	Dexter	Mower	1879	9	I S		Scarlet fever	5⅓			Irish	Tailor	
Sittkus, Edward	Hastings	Dakota	1869	9	H D	1876	Brain fever	2½			Prussian	Tailor	
Simon, Anthony	Mankato	Blue Earth	1866	12	H D	1876	Congenital				German	Cooper	
Simpson, Lillie M	St. Paul	Ramsey	1872	10	I S		Brain fever	1			American		
Slaven, Philip	Arlington	Sibley	1876	15	V W	1882	Meningitis	5			Irish	Cooper	
Smith, James L	Kedron	Fillmore	1873	11	G	1878	Brain fever	8			American	Tailor	Good articulator. College grad. A teacher.
Smith, Julia R	Medford	Steele	1877	12	I S		Scarlet fever	4			Scotch-Irish	Seamstress	[D. Hays, semi-mute
Smith, Verne H	Verndale	Wadena	1884	10	I S		Congenital				American		Married Dec. 25, 1883, A.
Smith, Grace O	Faribault	Rice	1868	10	V W	1872	Scarlet fever	1	1 sr.		American		Left the State.
Splettstœsser, Chas. T	St. Paul	Ramsey	1879	9	V W	1882	Typhoid fever	2			German		1 yr in college. P.O. clerk.
Spear, Anson R	Minneapolis	Hennepin	1874	14	G	1878	Meningitis	11½			American	Tailor	Sept. 10, 1884, married J. H. Halverson.
Starks, Hattie A	Janesville	Waseca	1882	20	I S		Scarlet fever	2		C.	American		Short time in N. Y. Inst.
Stanslowski, Pauline	Winona	Winona	1884	21	I S		Brain fever	7	1 C.		Pole		

Stenberg, Frank U	Chisago Lake	Chisago	1864	22	V W	1869	Brain fever	3	C. 2		German		Oct. 8, 1870, married C. M. Hardy, have 3 chl'd.
Sterrud, Helen M.	Mazeppa	Wabasha	1878	15	I S		Nervousness	3			Norwegian	Seamstress	1 year in Wis. Inst.
Stedman, Squire A	Lake Crystal	Blue Earth	1882	15	I S		Measles	1½			American	Shoemaker	
Streeter, Jesse K	Montrose	Wright	1879	9	I S		Scarlet fever	6 m			American		
Stuart, Jona G	Faribault	Rice	1872	13	V W	1873	Scarlet fever	1			Canadian		In Ontaria Inst. 2 years
Strickland, John R	Livingston	Gallatin, Mont	1884	12	I S		Meningitis	4			American	Cooper	In Wis. Inst. 2 years.
Sukey, Peter	Red Wing	Goodhue	1868	14	V W	1872	Congenital				German		Perished in storm of '73.
Stickney, Samuel E	Wyattville	Winona	1869	11	G	1876	Typhoid fever	6½	1 U. & 1 A.		American	Shoemaker	Articulator.
Taylor, Almira M	Shelbyville	Blue Earth	1863	15	H D	1870	Unknown				American		
Thompson, Fred L	Wasioja	Dodge	1865	12	H D	1872	Congenital				American	Cooper	
Thompson, Alice M	Garden City	Blue Earth	1873	13	H D	1880	Congeniral				American		Married a hearing man.
Thompson, Charles	St. Paul	Ramsey	1873	10	G	1884	Congenital				American	Printer	Pursuing studies privately.
Thompson, Knudt	Mansfield	Freeborn	1877	12	I S		Scarlet fever	1½			Norwegian	Tailor	
Thabes, Katie	Brainerd	Crow Wing	1881	11	I S		Convulsions	1			German		
Thorson, Ingeborg	Ashby	Grant	1876	18	H D	1884	Congenital				Norwegian	Seamstress	
Torbet, Laura I	Minneapolis	Hennepin	1877	11	I S		Meningitis	4½			American	Seamstress	
Torrey, Mary	Carver	Carver	1865	13	H D	1872	Scarlet fever	2			American	Seamstress	1873 married Wm. Martin, D. & D.; 2 children
Turner, Laura	Elba	Winona	1864	16	V W	1865	Congenital			C	American		
Urnes, Samuel O	White Bear Center	Pope	1877	18	V W	1880	Cold in head	3			Norwegian	Cooper	Died at home, Aug. 1880.
Viviahn, Fannie	Oak Ridge	Winona	1875	15	V W	1881	Measles	6			German	Seamstress	
Vogt, Anthony	Leavenworth	Brown	1876	10	I S		Cold in head	4½			German	Tailor	
Von Reuden, Theresa	Deerfield	Steele	1882	12	I S		Congenital				German		
Wallner, Julius	Faribault	Rice	1871	15	V W	1878	Congenital		2 brs. & 1 sr.	Cs	German	Cooper	
Wallner, August T	Faribault	Rice	1874	23	V W	1875	Congenital		2 brs. & 1 sr.	Cs	German	Shoemaker	
Wallner, Pauline	Faribault	Rice	1871	16	H D	1871	Congenital		3 brs.	Cs	German	Seamstress	
Wallner, Frederick	Faribault	Rice	1873	12	H D	1880	Congenital		2 brs. & 1 sr.	Cs	German	Shoemaker	
Ward, George R	Sauk Centre	Stearns	1880	10	V W	1883	Meningitis	3½			American		
Washburn, C. L	Minneapolis	Hennepin	1875	9	G	1884	Meningitis	5⅓			American	Printer	In College D. C. Articuator
Wattrich, Eliza	Reads Landing	Wabasha	1868	11	V W	1872	Measles				Swiss		
Wenholz, Fred	Henderson	Sibley	1874	11	V W	1883	Scarlet fever	7			German	Cooper	
Wells, Gertrude	Minneapolis	Hennepin	1879	10	V W	1882	Meningitis	3			American		Left the State in 1882.
Whitcher, Harriet J	St. Peter	Nicollet	1865	13	V W	1871	Scarlet fever	1			American		In Wisconsin Inst. 1 yr.
Wheeler, Julia R	Dayton	Hennepin	1865	22	V W	1866	Scarlet fever	3			English		In Iowa Inst. 6 years.
Wilcox, Olive A	Owatonna	Steele	1863		V W	1864	Scarlet fever	7			American		Articulator & lip reader
Wishart, James D	Minneapolis	Hennepin	1873	9	G	1881	Scarlet fever	4½			Scotch	Printer	
White, Spurgeon S	Lake City	Wabasha	1874	15	V W	1877	Typhoid fever	4			American	Shoemaker	
White, Mary Josephine	New Auburn	Sibley	1876	15	G	1882	Congenital		1 br. partially deaf.		American	Seamstress	4½ years in Wis. Inst.
Woolery, Jas. Gardner	Blue Earth City	Faribault	1872		Trial 6 m.		Canker	8			Canadian		Mind unbalanced.
Wolf, Henry	Minneapolis	Hennepin	1878	10	I S		Typhoid fever	4			German	Cooper	
Wirth, Henry	Minneiska	Wabasha	1879	10	V W	1882	Brain fever	3			German		Left the State in 1882.
Wilkins, Blanche H	Minneapolis	Hennepin	1883	10	I S		Meningitis	8			African		Articulator.
Wintheiser, Frank	Minneapolis	Hennepin	1884	10	I S		Brain fever	9			German		
Yorgensberg, Mina O	Canby	Y'w Medicine	1882	16	I S		Measles	1½			Norwegian	Seamstress	
Young, William	Preston	Fillmore	1881	10	I S		Congenital				American	Shoemaker	
Zuelsdorf, Fred Wm	Henderson	Sibley	1874	10	H D	1882	Brain fever	2¾	1 c		German	Tailor	

A BRIEF SUMMARY OF THE ABOVE LIST.

Whole number in attendance, or admitted, during 22 terms, —Sept., 1863, to Dec. 1, 1884		338
Number of males	199	
Number of females	139	
		338

Completed Graduate's course	61	
Honorably discharged	48	
Voluntarily withdrew	86	
* Received on trial	10	
Have died	6	
In school	127	
Total.		338

*Before Imbecile school was opened.

NATIONALITY.

American	104
German	74
Scandinavian	65
Irish	52
Canadian and French	17
English	10
Scotch	4
Poles	4
Swiss	3
Bohemian	3
Hungarian	1
African	1
Total	338

CAUSES OF DEAFNESS.

Congenital	100
Scarlet fever	53
Brain fever	49
Meningitis	42
Typhoid fever	18
Measles	10
Convulsions	10
Sores in head	10
By a fall	7
Nervousness	5
Cold in head	9
Various causes	25
Total	338

J. L. NOYES,
Supterintendent.

Financial Statement Concerning the School for the Deaf for Three Years and Eight Months, Ending July 31, 1884. *By the politeness of H. H. Hart, Secretary of State Board of Charities and Corrections.*

Date of Closing Period.	Number of Days in School Year.	Average number of Pupils.	Total Current Expense.	Annual Expense per Pupil.	Permanent Improvements from Current Expense Fund.	Total Current Expense Fund.
1881, Nov. 30.........	268	104.2	$23,122.09	$221.90	$1,365.29	$24,487.38
1882, Nov. 30.........	275	111.0	25,843.42	232.82	404.54	26,247.96
1883, July 31.........	195	122.7	19,141.99	156.01	1,446.17	20,588.16
1884, July 31.........	274	125.7	27,051.08	215.20	2,518.03	29,569.11

The average yearly expense per pupil, for three years and eight months is $225.25.

PROCEEDINGS

OF THE

FIFTH NATIONAL CONFERENCE

OF

PRINCIPALS & SUPERINTENDENTS

OF

INSTITUTIONS FOR DEAF-MUTES

HELD AT

MINNESOTA INSTITUTION, FARIBAULT, MINN.

JULY 9—13, 1884.

(Reported by Geo. N. Hillman, St. Paul, Minn.)

ST. PAUL, MINN.:
THE PIONEER PRESS COMPANY.
1884.

The following letters of regret were received by the local committee. A brief summary of them will be found in the proceedings:

COLORADO MUTE AND BLIND INSTITUTE,
COLORADO SPRINGS, July 4, 1884.

Prof. J. L. Noyes, Superintendent Deaf and Dumb Institution, Faribault, Minn.,

DEAR SIR: Your favor inviting me to the Conference came to hand, for which please accept my thanks. It has been my intention to attend, and I have looked forward with a great deal of pleasure to the opportunity of meeting with you in Conference, and consulting with my fellow-workers on deaf-mute work in general and Colorado affairs in particular, but an accident resulting from a horse running away has disabled me, so that attending the meeting at this time is entirely out of the question.

Please communicate my regrets to the Conference.

Very truly yours,
J. W. BLATTNER.

ST. JOSEPH'S INSTITUTE,
FORDHAM, NEW YORK, June 7, 1884.

J. L. Noyes, Superintendent,

DEAR SIR: I regret to say that circumstances will prevent my attendance at the coming Conference.

With thanks for your cordial invitation, I remain,

Yours sincerely,
MARY B. MORGAN,
Superintendent.

RED WING, July 10, 1884.

Prof. J. L. Noyes, Faribault, Minn.,

MY DEAR SIR: Until yesterday evening it was my expectation to go to Faribault to-day. I am prevented from doing so by a business matter that I cannot defer. I would go to-morrow, but for my engagement at Winona in connection with the Second Regiment encampment. I am very sorry to disappoint you, as well as to deprive myself the pleasure I anticipated in meeting the eminent gentlemen assembled in your Convention.

Yours very truly,
L. F. HUBBARD,
Governor of Minnesota.

NEWTON, KANSAS, July 6, 1884.

Prof. J. L. Noyes, Faribault, Minn.,

MY DEAR SIR: Instead of being on my way to Faribault, as I fondly hoped to be at this date, when last I wrote you, I am away out here in Kansas, bound for Colorado in search of health. I had anticipated much pleasure meeting old friends under your hospitable roof, but Providence has led me in another direction. I shall think of you all frequently the coming week, and wish you a harmonious and profitable meeting.

Yours fraternally,
D. C. DUDLEY.

FREDERICTON INSTITUTION
FOR THE EDUCATION OF THE DEAF AND DUMB,
HAWTHORNE HILL,
FREDERICTION, N. B., July 9, 1884.

DEAR SIR: Have the kindness to convey my sincere regret to the committee and members of Conference, that at the last moment I have been prevented from attending, on acconnt of sickness of Mrs. Woodbridge. I had made all arrangements to be present and was anticipating much profit and pleasure from the reunion, but the circumstances referred to necessitates my absence.

I am, Dear Sir, yours faithfully,
ALBERT F. WOODBRIDGE,
Superintendent.

INSTITUTION FOR THE DEAF AND DUMB AND THE BLIND,
RALEIGH, N. C., July 7, 1884.

Dr. J. L. Noyes,

DEAR SIR—I most sincerely thank you for your very kind and cordial invitation to attend the Conference of Principals and Superintendents, to be held in your Institution. It had been my intention, until a few days ago, to attend the Conference, but now I regret to say that circumstances are such that I do not think it would be wise for me to do so. Although I cannot be present at the Conference, it is my intention to visit many of the Institutions while the Schools are in session, and thus, perhaps, gain as much as I now lose. Hoping that the Conference will be a harmonious and pleasant one, and that your deliberations may be the means of doing much for the advancement of the cause of deaf-mute education, I remain,

Yours very respectfully,
W. J. YOUNG,
Superintendent.

MARYLAND SCHOOL FOR THE DEAF AND DUMB,
FREDERICK, MD., July 7, 1884.

J. L. Noyes, M. A., Local Committee,

DEAR SIR: I regret to say that, owing to illness in my family, I shall be unable to attend the meeting of the Conference of Principals from which I had anticipated great pleasure and profit.

Wishing the members of the Conference the utmost success in their deliberations and in the prosecution of their work in their respective fields, I remain

Yours truly,
E. W. ELY,
Principal.

LE COUTEULX ST. MARY'S INSTITUTION
FOR THE INSTRUCTION OF DEAF-MUTES,
BUFFALO, N. Y., May 20, 1884.

J. L. Noyes, M. A. Principal Minn. Inst. for Education of Deaf and Dumb.

DEAR SIR — Your very cordial invitation to the hospitality of your institution, during the Conference of Principals, was duly received for which please accept my grateful thanks. While I regret not being able to attend personally, it gives me great pleasure to inform you that I expect our institution will be represented, at least at some of the sessions of the Conference, by members of our board of trustees, T. F. Hines, formerly president for many years. and P. S. Danne, our present president, who will do themselves the honor of attending as honorary members.

With best wishes for a pleasant as well as profitable Conference, I have the honor to remain,

Yours very respectfully,
SISTER MARY ANNE BURKE,
Principal.

PENN. INSTITUTION FOR DEAF AND DUMB,
PHILADELPHIA, May 8, 1884.

J. L. Noyes,

DEAR FRIEND : I sincerely thank you for your cordial invitation, and wish it were in my power to say "I'll come." I think, however, that I shall not be able to make the journey. * * *

My health seems to be quite broken down, and I am inclined to think the time has about come for me to take my position on the shelf. During the last school year, I held an exercise in chapel every evening from the beginning to the end of the term, without a single omission, and I was not absent from the table a single meal. I began this term in hopes of going on in the same way — but began at once to go down hill, and kept on till I landed in bed. From that time to the present, I have been going on, trying to regain my lost strength, sometimes hopeful and often discouraged. I should have resigned, but the Directors would not let me. Unless some marked improvement comes soon, I shall quit any way, and try absolute rest. * * *

Yours truly,
JOSHUA FOSTER.

INSTITUTE FOR THE DEAF AND DUMB,
HALIFAX, NOVA SCOTIA, July 4, 1884.

MY DEAR MR. NOYES : I have delayed answering your kind invitation till the last moment, in the hope that either myself or some other representative of this Institute would be able to be present at the Conference to be held at the

Minnesota Institute on the 9th inst. In this hope, I am sorry to say, I am disappointed. It would have given me very great pleasure to renew association with yourself and other professional brethren whom I have not had the opportunity to meet since my return to America, and to make the acquaintance of new friends, but this pleasure, circumstances at present compel me to forego. I can only hope to be more fortunate at another time, and that you may have a pleasant and profitable gathering. Though absent in body, I shall be with you in spirit.

Believe me, Dear Mr. Noyes, yours very truly,
J. SCOTT HUTTON.

CHICAGO, June 26, 1884.

Mr. J. L. Noyes,

DEAR SIR: As early as in the year 1844, I began teaching deaf-mutes by the oral method, when I was still in Switzerland. I learn from the program of your fifth Conference, that one of its topics is: "Articulation and the latest discoveries and improvements," and I am at work to prepare a paper on this topic, but as I see now, it will become too copious and would, in spite of its conciseness, grow to a book. I shall prefer to give a short lecture on Articulation and to make a practical test of my method, by applying it to some really deaf-mute pupils, or to some members of the Conference who will assume the position of deaf-born scholars.

I am sure that my discrimination of the vowels is the latest discovery. Prof. W. D. Whitney, of Yale College, wrote to me that he and some of his advanced scholars are *strongly* inclined to adopt my views. My classification of the vowels is so: 1st—*Back*-vowels. 2d—*Root*-vowels. 3d—Compound-vowels. 4th—Double-vowels, and 5th—*Sliding*-vowels. The *Root*-vowels, mainly produced by the root of the *tongue*, form the series from the *neutral* vowel or from *ă* to *ee*. The elevation of the forepart of the tongue is but the consequence of the *depression* of the root of the tongue in order to *give way to the root*, for we can elevate the forepart without depressing the root—for instance in pronouncing the sonant *l* when the *neutral* vowel is heard, but not vice versa in pronouncing *ee*. Also my *method* of teaching to utter the single sounds and letters will comprise very important improvements.

Again

CHICAGO, July 13, 1884.

DEAR SIR: As it is impossible for me to attend your Conference, I hastily request you to communicate to the members, that I would gladly be willing to expound my principles and methods privately to one or more gentlemen, if I could meet them here on their return. If any one of the gentlemen will visit me here, please hand my manuscripts on articulation to him, in order to talk with him about it, and to have it returned to me. If none of them declares to do so, please send the manuscript back immediately.

Respectfully and truly yours,
A. SCHNYDER,
4020 Butterfield Street, Chicago.

Prof. Schnyder's papers were placed in the hands of the business committee.

INSTITUTION FOR THE DEAF AND DUMB,
CAVE SPRING, GEORGIA, June 12, 1884.

Prof. J. L. Noyes, Faribault, Minn.

MY DEAR SIR : I have been living in hope that I could be with you at the Conference, but with the light before me now, I am compelled to say that it will be impossible for me to be there.

With many wishes that the brethren may have a pleasant and profitable meeting, and that when they are gone, *you* may be able to say, "I am *glad* to have had them here,"

I am yours sincerely,
W. O. CONNOR.

CENTRAL NEW YORK INSTITUTION FOR DEAF-MUTES,
ROME, N. Y., June 21, 1884.

MY DEAR MR. NOYES: It is with regret that I write I, with Mrs. Nelson, will be unable to be present at the next Conference of Principals, to be held at the Minnesota Institution on the 9th of July, 1884. The pleasure of visiting your institution and of meeting Mrs. Noyes and yourself we must postpone for some time in the future. Wishing every success for the Conference and hoping to receive the particulars, and with kind regards to Mrs. Noyes and yourself from Mrs. Nelson and myself,

I remain very truly yours,
E. B. NELSON,
Principal.

MONTREAL INSTITUTION FOR THE DEAF AND DUMB.
MILE END, May 5, 1884.

DEAR SIR: I regret very much not being able to assist at the Fifth Conference of Principals, which I consider very important for the class we are devoted to. I am already engaged from the 12th of July to the 30th.

Wishing great success to the Conference,

I remain yours affectionately,
ALFRED BELANGER,
Principal.

CALIFORNIA INSTITUTION
FOR THE EDUCATION OF THE DEAF AND DUMB,
AND THE BLIND.
BERKELEY, June 25, 1884.

MY DEAR NOYES : I have received the circular invitation to the Conference and regret that I shall not be able to attend. I expect to be putting up a building this summer, and the appropriation is not sufficient to justify a superintendent of construction, so I shall have to do that business myself.

I am wofully disappointed at the miscarriage of the California Conference, and think I have some right to feel sore. However, I do not allow my chagrin to affect my good wishes for a successful meeting at Faribault, and kindly greeting to the brethren who have gone back on me * * * I should be *very glad* to *meet you* and see all that you have carried out since 1876.

Yours faithfully,
W. WILKINSON.

DEAF AND DUMB INSTITUTION,
MONTREAL, May 1, 1884.

J. L. Noyes, Faribault, Minn.,

SIR: Your cordial invitation to attend the Conference has been thankfully received.

I regret that I cannot be present on the occasion.

Hoping that the Conference may prove a source of good to the children for whose welfare so many noble hearts and heads zealously labor,

I am, sir, yours respectfully,
S. PHILIPPE, Superintendent.

CLARKE INSTITUTION FOR DEAF-MUTES,
ROUND HILL, NORTHAMPTON, MASS., July 5, 1884.

Mr. Noyes,

DEAR SIR: I very much regret that I shall be unable to attend the Conference of Principals, as I anticipated in the spring. I have not been very well of late, and my physician forbids my taking so long a journey.

With hearty good wishes for the success of the Conference,

I am yours sincerely,
H. P. ROGERS.
Principal.

MISSOURI INSTITUTION FOR THE EDUCATION OF THE DEAF AND DUMB,
FULTON, MISSOURI, May 31, 1884.

Mr. J. L. Noyes,

DEAR SIR: Your circular stating time and place for Conference of Principals has been received. I would have answered sooner, had I not been absent two weeks. Not being able to attend, I have requested Mr. Tate to represent this Institution in my place, and he has consented to do so.

I regret exceedingly that I am not able to attend; hope the Conference will prove both pleasant and instructive to all.

Respectfully,
W. D. KERR.
Superintendent.

THE CONFERENCE.

The Conference was called to order at 8 o'clock P. M., July 9, by Dr. P. G. Gillett, Superintendent of the Illinois Institution for the Deaf and Dumb, Jacksonville, Ill., who said:

LADIES AND GENTLEMEN: The time has arrived to organize the fifth Conference of Principals of American Institutions for the Education of the Deaf and Dumb. The Fourth Conference of Principals, in 1880, held at Northampton, Mass., on the third day of the session, appointed Dr. Gillet, of Illinois, Prof. Wilkinson, of California, and Miss Rogers, of Northampton, Mass., a committee to provide for the meeting of the fifth conference of principals. At the Convention of Teachers of American Institutions for the Deaf and Dumb, which was held in Jacksonville, Ill., in 1880, an informal meeting of the principals and superintendents who were there in attendance was held, and invitations were laid before that meeting, that had previously been presented to the conference of principals in Northampton — the first from California, that this conference might assemble there — and the next from the Minnesota institution, where we all have the extreme happiness of meeting this evening. There seemed to be an understanding that the conference should be held this time in California, and arrangements with reference to that end were prosecuted to a considerable extent, involving some traveling and quite an extensive correspondence, and it seemed to be fixed that the conference should be called, in due order at this time, at the California institution for Deaf and Dumb; but the meeting of the teachers of articulation in New York, occurring a few weeks ago, and an invitation to the teachers of deaf-mutes in America to participate in the exercises of the National Teachers' Educational Association, to meet in Madison, Wis., July 15–18, seemed to make it impractical to go to California at this time. Consequently, after consultation and correspondence with a number of the gentlemen and ladies chiefly interested, and after quite a number of requests from others and the information upon the part of some whom it was extremely desirable to have present at this conference, that they would not be able to attend in California, as chairman of the committee I assumed the responsibility of calling the conference at this time and at this place. Miss Rogers coincided in judgment, and, I think, preference, with that decision. I coincide in judgment, but not in preference—not that I like California better than I do Minnesota, but because I had been to Minnesota and I had seen the great and good things they have here and I had never been to California, and I was afraid I never would have an opportunity to go to California and have my expenses paid again, unless I went this time; hence my preferences were pretty strong that we might assemble this time in California. But my judgment got the better of my preference, this time, and consequently the following call was issued, which has brought us together here this evening. I presume it would be proper to read this call at this time:

ILLINOIS INSTITUTION FOR THE
EDUCATION OF THE DEAF AND DUMB.
JACKSONVILLE, ILL., March 17, 1884.

To the Superintendents and Principals of American Institutions for the Education of the Deaf and Dumb:

In accordance with the instructions of an informal meeting of superintendents held at this institution during the convention of American Instructors of the Deaf and Dumb, in 1882, and also with a wish of most of the superintendents communicated to me by mail, very favorable arrangements were made for the transportation of members of the Principals' Conference to San Francisco and return, to attend its next meeting at the California Institution, early in July next.

Recently, however, circumstances have so changed as to render it desirable, in the opinion of some, to postpone the meeting in California to another year. The American Teachers of Articulation are to hold a convention in New York, June 25, 1884, which a number of superintendents desire to attend. Members of that convention also desire to attend the Conference of Principals. It would be obviously impracticable to attend both these gatherings the same season if one of them should be held in California. Out of deference to the wishes of parties interested, and for their convenience, it is deemed better to defer holding the Conference of Principals in California till a future time.

The American Educational Association have extended to the instructors of the deaf and dumb an invitation to meet in convention with them at Madison, Wisconsin, July 15–18, 1884. This recognition of our work as an educational one (sometimes miscalled a charity) is one which should be met by our profession in an appreciative spirit. And on this account, also, it is desired that the Conference of Principals be not held in California this year.

In view of these facts, as chairman of the committee of arrangements, I take the responsibility of announcing that the next Conference of Principals will convene at the Minnesota Institution for the Deaf, at Faribault, Minn., on Wednesday, July 9, 1884, a cordial invitation having been received from the trustees and superintendent of that institution to hold the conference there.

Prof. J. L. Noyes, superintendent of the Minnesota institution, will act as local committee of arrangements, and will make all further announcements with reference to the conference.

Trusting that my action in making this change (which, though contrary to my preference, is in accordance with my judgment) will receive the approval of all members of the conference, as well as those who have requested the change,

I am, respectfully yours,
PHILIP G. GILLETT, Chairman.

I ought to say, in justice to Mr. Wilkinson, that he did not consent to this arrangement, but he and other California friends had their hearts so set upon our going to them at this time, that it was quite a disappointment to them that we did not go to the Pacific Coast, instead of coming here.

In accordance with this call, we are here present this evening, and, as chairman of the committee of arrangements, I take the responsibility of calling the convention to order, and would nominate Miss Sarah Fuller, the principal of the Horace Mann School, Boston, for our temporary chairman.

The nomination was made unanimous, whereupon Miss Fuller was escorted to the chair by Prof. J. L. Noyes, Superintendent of the Minnesota Institution, and was introduced to the conference by Dr. Gillett.

Miss Fuller then spoke as follows:

Ladies and gentlemen of the conference: I thank you for your cordial and courteous recognition of the Boston school, and I wish that I were better able to express my appreciation of the honor conferred upon me.

This is the hour appointed for the formal opening of the conference, but, to many of us, it really opened when we assembled in Chicago, at the call of Dr. Gillett, chairman of the committee of arrangements. To his thoughtful, painstaking care we are indebted for many opportunities for an informal exchange of thought; I think we may receive this happy beginning as a foretaste of the feast to which we have been invited, and believe that we shall return to our work with increased mental and moral strength.

The conference is now ready for the customary organization. I think, at this stage of the proceedings, it is proper that a temporary secretary be appointed.

On motion of Mr. J. C. Covell, of West Virginia, Mr. A. L. E. Crouter, of the Pennsylvania Institution for the Deaf and Dumb, was made temporary secretary.

On motion, the Chair appointed Dr. Edward M. Gallaudet, President National Deaf-Mute College, Washington, D. C., R. Mathison, Superintendent of the Ontario Institution for Deaf and Dumb, and Dr. P. G. Gillett, of Illinois, committee on organization.

On motion, the Chair appointed J. W. Swiler, Superintendent of the Wisconsin Institution for the Deaf and Dumb, J. R. Dobyns, Superintendent of the Mississippi Institution, and D. Greenberger, Principal Institution for Improved Instruction of Deaf Mutes, New York City, committee on credentials.

The Chairman—Is there any further business before the conference?

Dr. Gillett—Mr. President, perhaps if Prof. Noyes would indicate what would be convenient hours for the session of this conference, it would facilitate our labors.

Prof. Noyes—Breakfast at 8 o'clock to-morrow morning. The Conference will convene at 9:30, dine at 1, assemble again at 2:30, and have tea at six. I leave the evening session to the business committee.

If there is any lady or gentleman present attending the Conference who has not been assigned to a room and received proper attention, so far as entertainment is concerned, I will thank them to signify it to me immediately after the session this evening. And, Mr. Chairman, if it may be proper, just here I would like to say a word to those who have come so far. I want to extend to you, gentlemen and ladies, one and all, a most hearty welcome to our building, to our comforts and our hospitality. We thank you very much for coming so far and appearing here so early; and I want to do everything in my power to make this a pleasant occasion, and I trust the Conference will be of profit to you all. I know it will to us, and it certainly will be a pleasure to entertain you. We take some pride in our surroundings here and in this building. You must bear in mind that in 1866 these grounds were covered with a dense forest. There was then no road or street, nothing except an Indian trail. This location was selected, these buildings have been erected, and the whole work has been done here since that time, and all has been done for the comfort, the health and the elevation of the deaf-mutes of this State. Perhaps some of you think these little adornments in this room are for you; I assure you the children have enjoyed them here long months before you came. This picture here is the work of one of the children a little while ago, and that is the work of another, representing the old building where we spent two long winters before we moved to this spot. We have put these here, and the picture of dear Mr. Carroll, to show our interest in the deaf and dumb. The first institution money that was expended here for adornments was for the pupils' dining room, where you take your meals. I state this simply to indicate to you that the adornments and the arrangements and the comforts that are found here were designed and placed here for the purpose of giving a pleasant home to these children of Minnesota. Now, they are at their homes, and we look upon you as the dearest, the best friends that the deaf and dumb have in the world; and in their behalf we know of no friends that we can welcome here more cordially and have more pleasure in seeing and entertaining than you, the benefectors of this class of children in your respective States. Again I say we give you a most cordial welcome. If there is anything I can do to make this gathering pleasant, comfortable and profitable to you, call at the office or on me and we shall be glad to do it.

On motion of Dr. Gillett, a resolution making all members of boards of directors of institutions, and all who are now, or formerly were, actively engaged in the work of deaf-mute instruction honorary members of the Conference, was unanimously passed.

Thereupon, on motion of Dr. Gillett, the Conference adjourned, to meet at 9:30 A. M., Thursday, July 10.

SECOND DAY.

THURSDAY, July 10, 1884.

The Conference was called to order at half past nine o'clock A. M., and after prayer by Rev. Dr. Thomas Gallaudet, of New York, the Secretary's minutes of Wednesday evening's session were read and approved.

PROF. SWILER, of Wisconsin, as chairman of the committee on credentials, presented a report of the names of regular and honorary members, which was adopted.

ENROLLMENT OF ACTIVE AND HONORARY MEMBERS, APPROVED BY THE CONFERENCE.

Arkansas—John C. Littlepage, Principal of Arkansas Institution for Deaf-Mutes. *Honorary Members*—Mrs. Littlepage and Miss Mary E. Griffin.

Chicago Day School—P. A. Emery, M. A., Principal. *Honorary Members*—Mrs. P. A. Emery and Mrs. Mary A. Woodworth.

Connecticut—Job Williams, M. A., Principal of American Asylum.

Colorado—*Honorary Member*—Mrs. Anna Whitcomb, Matron of Colorado Institution for the Deaf and Dumb.

Dakota—James Simpson, Superintendent of Dakota School for Deaf-Mutes.

District of Columbia—E. M. Gallaudet, Ph. D., LL. D., President of National Deaf-Mute College. *Honorary Members*—E. A. Fay, Ph. D., Professor in National Deaf-Mute College; Olof Hanson, student. Alexander Graham Bell, Ph. D., Principal of Private School for Deaf Children.

Illinois—Philip G. Gillett, L. L. D., Superintendent of Illinois Institution for the Education of the Deaf and Dumb. *Honorary Members*—Mrs. P. G. Gillett; Mrs. A. J. Griffith, Principal of Art Department; Mrs. Kate Getty, Teacher in Art Department; Miss Louise Getty, Teacher; Miss Eleanor M. Patten, Teacher in Art Department.

Iowa—H. C. Hammond, M. A., Superintendent of Iowa Institution for the Deaf and Dumb. *Honorary Members*—Mrs. H. C. Hammond, Matron, and E. L. Sturgis, Teacher.

Kansas—H. A. Turton, Superintendent of Kansas Institution for the Deaf and Dumb. *Honorary Member*—Mrs. H. A. Turton.

Maine—Miss Ellen L. Barton, Principal of Portland School for the Deaf.

Massachusetts—Miss Sarah Fuller, Principal of Horace Mann School for the Deaf.

Michigan—M. T. Gast, M. A., Superintendent of Michigan Institution for the Deaf and Dumb.

Mississippi—J. R. Dobyns, M. A., Superintendent of Mississippi Institution for the Deaf and Dumb.

Minnesota—J. L. Noyes, M. A., Superintendent of Minnesota School for the Deaf. *Honorary Members*—Hon. T. B. Clement, President of the Board of Directors; Rev. Geo. B. Whipple, Vice President; Hon. R. A. Mott, Secretary; Hudson Wilson, Esq., Treasurer; Hon. George E. Skinner, Director; Prof. W. M. West, Superintendent of Faribault Public Schools; Hon. A. W. McKinstry, Editor of the Faribault *Republican;* Rev. E. L. Wilson, Professor in Seabury Hall; Professor Champlin, Shattuck School; Rev. E. Gale, Pastor of Congregational Church; Dr. Brewer Mattocks; Rev. S. B. Wilson, County Superintendent of Public Schools; Dr. George H. Knight, Superintendent of School for Idiots and Imbeciles; Prof. J. J. Dow, Superintendent of School for the Blind; Hon. D. C. Bell, of Minneapolis, President of the State Board of Charities and Corrections; Hon. H. H. Hart, of St. Paul, Secretary; Dr. J. F. Fulton, Oculist and Aurist, of St. Paul; Mrs. J. L. Noyes; Mrs. A. R. Hale, Matron of the Minnesota School; George Wing, Teacher; Louis

C. Tuck, Teacher; J. P. Kelly, Teacher; Nellie M. Franklin, Teacher.

Missouri—*Honorary Members*—Prof. J. N. Tate, Teacher in Missouri Institution for the Deaf and Dumb; Mrs. J. N. Tate; Miss Nellie Bailey, Teacher.

Nebraska—J. A. Gillespie, Superintendent of the Nebraska Institution for the Deaf and Dumb. *Honorary Member*—Mrs. J. A. Gillespie, Matron.

New York—Isaac Lewis Peet, LL. D., Principal of New York Institution for the Deaf and Dumb.—D. Greenberger, Principal of Institution for Improved Instruction of Deaf Mutes.—Z. F. Westervelt, Principal of Western New York Institution for Deaf Mutes. *Honorary Members*—Rev. Thomas Gallaudet, D. D., Rector of St. Ann's Church for Deaf Mutes; Rev. Thomas F. Hines, ex-President of Le Couteulx St. Mary's, Buffalo, N. Y.; Rev. P. S. Dunne, President of Board of Trustees and Chaplain of Le Couteulx St. Mary's Institution for the Deaf and Dumb; Mrs. Z. F. Westervelt, Matron of Western New York Institution for Deaf Mutes.

New Jersey—Edward A. Spring, Perth Amboy, Director of Chautauqua School of Sculpture and Modeling.

Ohio—Amasa Pratt, M. A., Superintendent of Ohio Institution for the Deaf and Dumb.

Honorary Member—Rev. A. W. Mann, Missionary to Deaf-Mutes.

Ontario—R. Mathison, Superintendent of the Ontario Institution for the Deaf and Dumb.

Honorary Member—Miss Annie Mathison, Teacher.

Pennsylvania—A. L. E. Crouter, Vice Principal and Superintendent of Pennsylvania Institution for the Deaf and Dumb.

Honorary Members—F. W. Booth, Teacher, S. T. Walker, Teacher.

Western Pennsylvania—Rev. Thomas MacIntire, Ph. D. Principal of Western Pennsylvania Institution for the Deaf and Dumb.

Texas—Rev. William Shapard, Superintendent of Texas Deaf and Dumb Asylum.

Virginia—T. S. Doyle, Principal of Virginia Institution for the Education of the Deaf and Dumb, and the Blind.

West Virginia—John C. Covell, M. A., Principal of West Virginia Institution for the Deaf and Dumb, and the Blind.

Honorary Member—Rev. Job Turner, Missionary to Deaf-Mutes at large.

Wisconsin—John W. Swiler, M. A., Superintendent of the Wisconsin Institution for the Deaf and Dumb.

Honorary Members—Mrs. J. W. Swiler, James L. Smith, Teacher.

The CHAIRMAN—The next is the report of the committee on permanent organization; we will now listen to that report.

DR. GILLETT—Mr President: I remember a good many years ago, when this country was a great deal younger than it is now, of getting letters from Minnesota signed by a gentleman who has been known in the history of Minnesota as prominent and efficient in all educational and so-called benevolent enterprises. Those letters indicated a very just appreciation of the situation, and a very honest and earnest desire to come as speedily as possible into the advantages of the experience of others who had gone over the same ground elsewhere that the people of Minnesota, through their representatives, were about to pass over in this new State. If my recollection serves me correctly, the first legislature that ever met in Minnesota took the preliminary steps for the organization of an institution for the education of the deaf and dumb, and I think that one of the first appointees on the commission to carry into effect the purposes and intentions of the people and of the legislature of the State, was the Hon. R. A. Mott, who I am happy to say, came from Illinois to Minnesota.

PROF. NOYES—Glad he left the State, sir.

DR. GILLETT—(Continuing) But we are not disposed to abandon in Illinois all of our interest in Mr. Mott, and we propose to share with Minnesota the benefits of his experience and of his wisdom, and not only with Illinois but with all other states, as they are represented here this morning, and the committee were unanimous in the proposal to name as permanent Chairman of this Convention, the Hon. R. A. Mott. I believe he is secretary, and has been, from the establishment of the institation, of the Board of Trustees of the Minnesota Institution for the education of the Deaf and Dumb. And I consequently make this report: For President of the Conference, HON. R. A. MOTT; Vice-presidents, J. C. COVELL, of West Virginia, J. A. GILLESPIE, of Nebraska, and R. MATHISON, of Ontario; for Secretaries, A. L. E. CROUTER, of Pennsylvania, and J. L. NOYES, of Minnesota; for Business Committee, PRESIDENT E. M. GALLAUDET, of the National Deaf-Mute College, Washington, PROF. JOB WILLIAMS, of Connecticut, and REV. THOS. MCINTYRE, of Western Pennsylvania. I offer this, Mr. President, as the report of the committee.

Mr. HAMMOND—Mr. President, I move to ammend by inserting the word "railroad" before Secretary, after the name of Prof. J. L. Noyes.

DR. GILLETT—That amendment will be accepted.

The report was adopted, and the president-elect then stepped forward and took the chair and was introduced to the Convention by the temporary chairman.

Mr. MOTT then addressed the Conference as follows:

I really do not know what to say in response to this expression of your confidence and regard. I know that I have no just cause to be counted among the prophets, but when I look in the face of this Conference and read the roll of its delegates, of this thing I am confident, that there is no body of men in America who can better afford to assign their honors to outsiders than this body; you don't need them. And now I suppose, according to all well-approved precedents, I ought to stop talking and proceed to business, but I really have something I want to say to you. "Hear! hear!" I wish I knew how to say it nicely, but as I don't, I will say familiarly to you, in the name of the Directors of this institution, who have co-operated with President Noyes in inviting you and in preparing for your visit, that we give you a hearty and cordial welcome to our State, to our city, to our institution home, and to all our hospitalities. We give a cordial greeting to these ladies, who have come with their hearts full of sympathy to the unfortunate; I think I see the little angels of love peeping out of the corners of their eyes, giving assurance that they will co-operate with you in every department of your great work. I welcome the younger members of the profession, good, strong, men, with new-born zeal, realizing that very soon the burden of this work will rest upon their shoulders—and we thank God that it is going to rest on such noble shoulders. But our hearts go out, more than all, to these old veterans—the American pioneers in the work of educating the deaf,—and we see here, Moses and Aaron, David and Elias, and the eleven apostles—you know I throw out Judas—and I can't find any language to express the feelings of joy with which our hearts welcome you here to-day.

Personally, I want to allude to the fact that twenty-one years ago some of these gentlemen patiently let light into my ignorant brain on this great question, and their long letters of advice and direction will never be forgotten. You see the proofs of some of that wise direction to-day. I want to give a word of warning to the younger members of this Convention,—I hope you will heed it: These old fellows look very mild and peaceful, but I know that they have been men of war from their youth up, and they are full of fight now, and you must be a little careful about brandishing your new-fangled theories and pet hobbies, or your scalps will be added to the clusters that already dangle at their belts.

Gentlemen, the bright skies above and the deep emerald fields below unite to give you joy and welcome, and may the Great Father give you health, strength and vigor; may he hang his cyclones on the furthermost corners of the earth and lock up the earthquakes in His strongest caves. You are welcome.

Dr. E. M. Gbllaudet—Mr. President, while the committee appointed on the Order of Business may take an opportunity to make an arrangement as to the order of business, I would suggest that Mr. Noyes be offered the opportunity of presenting a selection, perhaps, from letters which have been sent in, expressing the regret of members of the profession at not being able to be present, and also of making such other announcements as he may desire to make.

The President—It will be so ordered unless objection is made. President Noyes, you have the floor.

Prof. Noyes—I will gladly avail myself of the opportunity. Mr. President, I have received a large number of responses to the invitations which have been sent out. I regret very much that our governor, the Hon. L. F. Hubbard, who promised to be here, has telegraphed me a second time that it will be impossible for him to be with us to-day. He sent his regrets, and his hearty congratulations and his wishes for the success of this conference.

As these letters are somewhat numerous I will not take up your valuable time by reading them at length, as I can express the gist of them in a very few words.

Sister Mary Ann Burke, from the institution in Buffalo, New York, sends very cordial greetings to you and her sincere regrets that she is not able to be present with you and take part in your deliberations. She states, however, that Rev. T. F. Hines, former president of their board, and Rev. P. S. Dunne, the present president, will be here, to attend, as honorary members, a part of the time. They have not yet arrived, to my knowledge.

Miss Rogers, of Northampton, has written me on two or three occasions. She was very desirous to come, but having participated in the Convention recently at New York, and not being in very firm health, she has been advised not to take this long journey, and she sends very cordial greetings and hearty wishes for the success of this Conference, and very much regrets her inability to be with you.

Mr. Nelson, of Rome, New York, sends a letter of regret and hearty good wishes for the success of this Convention.

The Rev. Alfred Belanger, director of the school in Montreal, writes a very cordial letter; I will not take the time to read it. He "wishes you great success in your deliberations and great unity in your plans for the future."

Out of deference to our good friends in California I will read a portion of the communication from Mr. Wilkinson: "I have received the circular inviting me to the Conference and regret that I shall not be able to attend. I expect in the putting up of a building this summer, the appropriation will not be sufficient to justify the hiring of a superintendent of construction, and I shall have to do this business myself. I am woefully disappointed at the miscarriage of the California Conference; I think I have some right to feel so; however, I do not allow my chagrin to affect my good wishes for the successful meeting at Faribault and kindly greeting to the brethren *who have gone back on us.* You know how we all feel in regard to that, and none more so than Dr. Gillett, the chairman of the committee of arrangements."

Miss Garrett also sends a letter of congratulation, and regrets her inability to be present.

I have letters assuring me that Mr. Superintendent Walker and wife, of South Carolina, will be here. We hope to see them before the Conference closes.

I have a letter from the Deaf and Dumb Institution, Montreal, from Sister Philippe, superioress of the institution, who sends her regrets and good wishes.

Superintendent Dudley of Kentucky promised to be here, but a letter is received from Prof. Schoolfield, of the Institution, stating that Mr. Dudley is in poor health—he has been in Colorado—and I fear that he will not be able to meet us.

Prof. Tate, who is present, and represents the Missouri Institution, will tell you how sincerely Superintendent Kerr regrets that he is not able to be with us. He sends very cordial greetings and hearty wishes for unity and success in your work.

St. Joseph Institute, Fordham, New York,—the Superintendent, Mary B. Morgan, sends thanks for the invitation, and regrets that circumstances at home will prevent her attending the Conference at this time.

I beg leave to read to you a letter from Halifax, from our good friend J. Scott Hutton. "My dear Noyes: I have delayed your invitation in the hope that either myself, or some member of this institution, would be able to attend the Conference in Minnesota. In this hope I am sorry to say I am disappointed. It would have given me very great pleasure to renew associations with yourself and other professional brethren whom I have not had the opportunity to meet since my return to America, and to make the acquaintance of new friends, but this pleasure circumstances at present compel me to forego. I can only hope to be more fortunate at another time, and that you may have a pleasant and profitable gathering. Though absent in body, I shall be with you in spirit. Believe me, yours very truly, J. SCOTT HUTTON."

Prof. Blattner, of Colorado, fully expected to be present with us. He has recently met with an accident, that prevents his attendance.

I have a letter from Mr. Joshua Foster, Principal of the Pennsylvania Institution at Philadelphia. He writes one of his old-time, characteristic, cordial letters, regretting very much that "the infirmities of the flesh and not any want of willingness on the part of the spirit" detains him from joining you in your deliberations, and he sends most hearty greetings, and wishes for the best success of your Conference here to-day.

DR. GILLETT—Mr. President, Mr. Foster is one of the Moses and Aarons and Joshuas spoken of by our President; wouldn't Prof. Noyes read his letter to us?

THE PRESIDENT—If Joshua has left a letter, we all want to hear it.

PROF. NOYES—It will be presented in due time. I have before me a communication from Mrs. Mary Laughlin, a former teacher of deaf-mutes. The point of the letter is this: She has evidently had considerable experience in teaching, and she has prepared a manuscript of primary work for the education of the deaf and dumb, and she wants to know if it is worth publishing. I have only glanced at it very hastily, but I know this, there are some points of real merit in it, and if it is your pleasure, I would suggest that a committee of three of this Conference be appointed some time during the present meeting of the Conference to examine this, and give some brief report with reference to it. If it is valuable, she would like to have it published; if it is the judgment of practical men that it is not valuable, she don't want to waste money on it. There would be some considerable expense in getting it up in the form desired.

DR. I. L. PEET, Principal of the New York Institution for the Deaf and Dumb—I would submit, as an amendment to that, that any other work that may have been presented to the conference, should go to the same committee. I think it is a very important branch of our work.

PROF. NOYES—If I might be permitted, I would make a motion that a committee of three be appointed on publication of special works for the education of the deaf and dumb.

THE PRESIDENT—As a permanent committee?

DR. THOS. GALLAUDET suggested that this committee be continued until the next Conference.

THE PRESIDENT—Let the Chair suggest, as I am not as familar with all the members of this Convention as some of you gentlemen are, that you take time to reduce that resolution to writing, and name the committee yourselves. Don't leave it to me to make a mistake in the appointment of that committee.

MR. CROUTER—I would suggest that all resolutions be reduced to writing.

MR. GREENBERGER—I would like to call the attention of the Conference to the fact that at the last Conference such a committee as is proposed now was appointed, and Mr. Hammond, of Arkansas, who is present with us, is the chairman of that committee.

MR. HAMMOND—I can make a verbal report, if the Conference desires.

THE PRESIDENT—Just a moment, if you please, Mr. Hammond. I don't wish to decline to entertain that motion of Mr. Noyes; the Chair simply suggested that it be reduced to writing, and that you might name the committee. If you withdraw your motion for a while and will present it in that way——

PROF. NOYES—Yes, sir; I will withdraw with your permission, Dr. Gallaudet.

DR. GALLAUDET—Yes, sir.

MR. HAMMOND—Mr. President and members of the Conference, as chairman of that committee, I can simply make a verbal report, that it was a part of our duty to receive suggestions from members of the Conference, and from others, with regard to illustrating objects that were to go into text-books, and I believe that the chairman of the committee sent out notices to parties to send in such suggestions as they had to make, and it was supposed that the work would be done by the Art Department of the Pennsylvania Institution of Philadelphia; but nothing further has ever come of it. The committee, consequently, has to report that that is all the progress that has been made. I can make that report in writing at some future time, if necessary; that is the gist of it.

DR. E. M. GALLAUDET—Mr. President, will the report of the committee on order of business, be in order at this time?

THE PRESIDENT—I suppose so.

DR. E. M. GALLAUDET—The Superintendent of the Dakota Institution desires to make a motion with regard to the interpretation of the proceedings of the Convention. I would allow him to make that motion, before presenting the report of the committee on order of business.

MR. JAMES SIMPSON—Mr. Chairman, on behalf of the members of the Convention, I move that Dr. Thos. Gallaudet be the official interpreter of this Convention, with the understanding that readers of papers are free to select their own interpreters.

The motion was adopted.

MR. JOHN W. SWILER (Superintendent of the Wisconsin Institution),—Mr. President, in accordance with the suggestions of the secretary, and in order to faciliate his labor, I would move that all resolutions presented for the consideration of this Conference be presented in writing.

DR. THOS. GALLAUDET—Your motion is not in writing yet.

THE PRESIDENT—It is moved by Superintendent Swiler, of Wisconsin, that all resolutions for the consideration of this convention be presented in writing. Are you ready for the question? All in favor of that motion say aye; opposed, nay. The ayes have it, the motion is carried.

Dr. E. M. Gallaudet—Mr. President, the committee on the order of business of the Conference is prepared to make a partial report. They propose that this morning we should proceed presently to the consideration of the subject of art education for the deaf. On that subject two papers are ready for presentation, one by Mrs. Griffith, the Instructress in Art in the Jacksonville Institution of Illinois, and one by Prof. D. Greenberger, Principal of the Institution for Improved Instruction of Deaf-Mutes of New York.

We have present with us a gentleman who has given considerable attention to the subject of art education in general, and with a particular application of it to the instruction of the deaf in the Illinois Institution, and the committee take pleasure in requesting Prof. Spring to follow the reading of these papers with some remarks, and the subject will then be open for discussion for the balance of this morning's session.

For the afternoon session, the committee suggest that the first paper be one on the Causes of Deafness, by Dr. J. F. Fulton, of St. Paul, who will be here to-day, and to-day only. For the latter portion of the afternoon no order is as yet prepared, and the committee particularly request that members of the Conference who have papers to be presented, or who have topics which they are prepared to present in any formal manner, will, at the adjournment of this morning's session, immediately inform the chairman of the committee on the order of business of the topics of these papers, in order that the committee may make arrangements for their presentation in proper order; also that the topics to be discussed may be given in writing to the chairman of the committee, so that we may be ready for work on the succeeding days of the Conference.

The President—The Conference has heard the partial report of the committee on order of business. That order will be observed unless objection is made.

Mrs. A. J. Griffith will now present to the Conference a paper on Art Education.

ART EDUCATION.

Never before in its history has art occupied so prominent a part in the minds and hearts of the people of our nation. Our libraries are being filled with instructive art literature, while our homes are being beautified and made attractive by its various products. Our tastes are fast becoming more cultivated, not in the unsatisfied craving for time-worn relics, nor for an excessive admiration for the sunflower and the lily; these have their value, but we are learning to discriminate between the false and the true—seeking to get nearer the reality, "to see the thing as it really is," stimulating us to high thinking, individuality of aim, and a purpose to attain that great and true end of art which kindles the moral sense as well as delights the feelings. Art is not for artists alone; it is for all humanity, universal in its influence, developing in *all* those nobler faculties which God has given for that appreciation of his works in nature esthetically, which science enables us to have intellectually.

True education is that which fits man to become the highest and best in his nature's capability. Human nature in all is essentially the same, yet individuals composing this family are in many respects very unlike. We each have an individual character which distinguishes us from every other being. We have the same faculties, but they are in different degrees of power, activity and development. We find in *some* mechanical genius, in *others* mathematical, artistic or literary instincts, while in others no particular taste for one pursuit more than another. It is the duty of the true educator to recognize this individuality of the pupil, and while he may be exercised in studies for which he has no particular aptitude, as far as is necessary for a respectable position in life, yet chiefly should he be exercised in the specialty for which he has the greatest aptitude, thus not only adding to his enjoyment, but also fitting him for the greatest usefulness in life for which he is capable. Upon careful investigation we find a much larger proportion of the deaf-mutes who have a talent for an art education in its more common acceptation, including drawing, designing, modeling and painting, than we find in the same number of hearing pupils. Should we not expect this? Let us consider that to them the eye is only an avenue to the mind, and that their language is one of gestures, pictures drawn in the air, giving expression to the vision of the mind and heart. The eye thus becomes to them a valuable instrument and it is of great importance that it be carefully trained. Since the delights of music can never charm their ear, nor the sound of a mother's loving voice reach the silent chambers of the soul, we should most earnestly endeavor to furnish them with all possible helps to enjoy the pleasures of color and delights of form by which they are surrounded. Drawing is an invaluable element in the education of the mental faculties. As an illustration of this fact, an instance is remembered of an apparently dull and stupid boy, who made little or no progress in his school work, and was only happy when allowed to fill his blackboard with the pictures of his own fancy, as likely to be a representation of a cyclone and its consequent funeral procession, or his teacher's body dangling from the gallows, as of the sports on the playground or the scenes of his home. After receiving a few lessons in skillful use of the hand and eye, finding that he could give an accurate expression to the ideas and thoughts of form that came into his mind, he was stimulated to further trials, his successes awakening in him such a desire for knowledge his school work was no longer *drudgery*, but became a delight. Art *must* be a *beautifier* of *character;* since we study of the things of beauty as we see them in nature, it cannot but fill the imagination with that which is pure, good and beautiful, giving strong conceptions of the higher and beautiful life.

Industrial education, which fits men and women for the practical business of life, is rapidly demanding a prominent place in the educational systems of our time. In this Germany took the initiatory steps near the end of the last century, and to-day is one half century ahead of other European nations in schools of practical industries and is the acknowledged leader of this branch of art as carried on in the laboratory, studio and workshop, and is quoted as a nation of most intensely practical workers, who enter every vocation with technical skill and are rewarded by success.

A thorough training in drawing and design are the prime requisites for success in this industrial education. Prof. Ware, of Boston, says, "To the workman it is of greatest practical value; it makes him more intelligent and serviceable; every branch of our industry is suffering from the want of just this kind of intelligence and skill." The time is past when art is to be considered merely an accomplishment. It is a branch suitable and desirable for *all*, without distinction of sex or social surroundings. Even in the work of the school itself, in history, geography and scientific study, the teacher who can illustrate the products of a country, the habits and costumes of the people, weapons of war or implements of agriculture by rapid sketches before a class of deaf mutes, has a power of fixing the ideas and conveying instruction much more forcibly than by language. Wayland Parker says, "I see in drawing a future which I see in nothing else, in the way of *developing* mental powers, and the *demand* made upon teachers for knowledge and skill in this art, must increase with every year." Art education in the form of industrial training, whatever it may cost the country, will be repaid to it in the increased value of its industrial products. Heretofore our skilled workman and draughtsman have been imported. Yearly the United States sends millions to Europe for articles that we might produce if we had skilled designers.

Oliver Ames's new house in Boston, just completed, has $40,000 worth of wood-carving and modeling in it, and almost every workman thereon was a foreigner and the designers were all imported. The merchants and manufacturers of Massachusetts, thus recognizing the needs of trade, urged and secured the passage of a State law requiring drawing to be taught in her public schools, and we hope this is the beginning of a system of public art education the progress and development of which will find no parallel in any country. If it be asked when shall drawing be introduced, we reply, in the earliest stages of education, when the mind is most susceptible to impressions and may be most readily trained.

Can every one learn to draw? Walter Smith, Professor of Art Education in Boston, says: There are but four classes of human beings whom it is found not practicable to instruct in drawing—the blind, the idiotic, the lunatic and the paralytic, of the rest of mankind exactly one hundred per cent can be taught to draw, and, I am happy to state, in our Institution the pupils belong to the *rest* of mankind. Why not learn to draw as well as to write? If we can imitate the written word, why not the picture? We do not hope in all cases to make great artists; they are heaven-born, so are poets and great composers. Yet there are multitudes who add to their own enjoyment and that of those about them in the pursuit of art, whatever may be their aspiration for pre-eminence. This should be made an important factor in *all* of our Institutions as it already has in some in the prosecution of our work. The field of labor for the deaf-mute heretofore has been quite circumscribed, and it widens as we afford them new opportunities; it is a frequent complaint with them that the way to various trades is hedged about. This opens the avenue to them to become designers, decorators, woodcarvers, brass-hammerers, fresco painters, wood and steel engravers, photographers, lithographers, teachers, etc.—in short, they can enter any workshop where such skill and knowledge is required. Some one says, "all doors open to capacity." If the deaf-mute boy or girl can draw or paint, design or decorate as well as others, their work is sure to be remunerated.

About ten years ago the experiment of teaching drawing to the deaf-mutes was introduced into the Illinois Institution, as a part of its curriculum. A class of five was first organized, to-day three of those are successful teachers in this work, another is being well remunerated by the sale of her work, while the remaining one is contributing to the support of his aged father and mother by making crayon portraits, and bids fair to rise to some degree of prominence in clay modeling and sculpture.

From time to time this work has been extended until now every pupil over two years in school receives regular and systematic instructions in the rudiments of drawing and design. Special classes are formed of those who are found to have promising talent, and instruction given from one to two hours each day in freehand, design, model, object and perspective drawing, shading and coloring from the flat, from cast and from life, in charcoal, crayon, oil and water color. In the past year we had over fifty pupils in special classes requiring the labor of three teachers (two of them mutes); these special classes are so arranged as not to conflict with the regular work of the school room or the Industrial department. There is no rigid system of instruction followed. As the tastes and talents differ, the methods are varied. If necessary to use drawing books, we found Walter Smith's system very helpful. In the institution library are a choice collection of books on art selected with great care and expense, which have proved necessary in creating an art sentiment in the classes, and also to the art club, composed of the most advanced pupils, which meets an hour each week to study of art and artists.

Mr. D. Greenberger was then introduced and said:

Mr. President, my paper is not exactly on Art Education; I intended to write a paper upon that subject, but before I was through with it I found that I referred to industrial art, as a desirable occupation for a large number of our pupils. I have also written down a few remarks on several other occupations which I consider very desirable for some of our most intelligent mutes. With your kind permission I will read this paper. If it is not in order I will be glad to stop at any time when you are tired of listening to me.

TRADES AND OCCUPATIONS.

Of late years the desire to improve existing methods of deaf-mute instruction has been universal. If these efforts are successful, we may hope that in the future the deaf, as a class, will be able to occupy better positions in life than they have been able to fill in the past; the instances of deaf-mutes being successful as merchants, manufacturers, artists, journalists, etc., will not be so rare as they have been heretofore. And that portion of our pupils which, after leaving school, has to be contented to earn a scanty living by manual labor, of the simplest kind, will not be much greater than it is among an equal number of hearing persons.

What occupations will be most suitable for the majority of our pupils if we succeed in our endeavors to do our work better than we have done it heretofore? To what branches must we pay special attention so as to best prepare them for those occupations? These are questions which, in my humble opinion, deserve our most serious consideration. I therefore offer the following suggestions, and hope that they may draw forth a discussion which will prove profitable to all of us and result in great benefit to our pupils:

1. I do not know of any other field of labor that seems to be so desirable for many deaf-mutes to enter as industrial art. I consider it preferable even to pure art. A good lithographer, designer, engraver, wood carver, or silversmith, etc., almost always finds employment, and commands high wages. I am told that there are some lithographers in the city of New York who are steadily employed at a fixed income of $200 a week. Of course, these are artists of rare talents and ability, which but few are fortunate enough to possess. The ordinary wages paid to good workmen for lithographing, engraving, carving, chasing, etc., is from $40 to $50 a week. Good draughtsmen, who can make designs for carpets, wall-paper, etc., receive from $200 to $500 a month. I have just heard of a hearing and speaking young man who is now nineteen years of age. He entered the designing department of a large carpet factory in New York when he was fifteen years old and received $8 a month the first year, $25 a month the second, $50 the third, $75 the fourth, and during the present year, which is his fifth, his salary is $100 a month.

There are a number of establishments in New York, and other large cities, also, in which girls who can draw and paint can earn from ten dollars to twenty dollars a week by decorating china. The Society of Decorative Art, 28 E. 21st St., N. Y.,—the object of which is to provide a place for the exhibition and sale of art work of women,—receives and sells appropriately decorated articles for household or personal use, such as pottery, china, tiles, placques, embroideries, curtains, lambrequins, panels, screens, fans, etc., etc. Girls may do work of this kind at their homes and send it to this society for sale.

A number of the former pupils of the institution which I represent are engaged in artistic trades, and I am glad to say that all are doing well. Some of them showed natural talent for drawing and sketching while they were in school, and I therefore advised them to choose their respective occupations. Others who did not seem to possess such talents, have become art workers, without my advice. They, too, are doing well, without exception. It seems that there is as much demand for simple art work, which can be done by persons of moderate skill, as there is for productions that require talent of the highest order. If a boy has no aptness at all for drawing it is of course better for him not to attempt to engage in an occupation for which such aptness is requisite. But if he promises to acquire even a moderate amount of skill only as an operative, I would still encourage him to learn an artistic trade. I have no prejudice against honest labor of any kind, yet I would rather see my pupils do the simplest kind of work and earn moderate wages in an atmosphere of culture and refinement, than to have them occupy the most remunerative places in shoe shops, planing mills, etc.

In order to prepare our pupils for artistic industries, we must give them thorough instruction in drawing in all its branches. Pen and ink drawing, being used in photo-engraving and other new processes, seems to have been in greater demand of late than any other kind of drawing. If our boys will spend more of their leisure time in taking pen and ink and copying the illustrations which are found in their text books, for instance, they may be able to take places, after leaving school, which will pay them handsomely from the very beginning. As a rule, however, boys learning an artistic trade require some pecuniary assistance during their apprenticeship, because they do not earn enough for the first year or so to support themselves. A few years ago, one of our boys who lived in the country on a small farm, was put to work in a brick-yard near his home, after leaving school, and earnedone dollar a day. Knowing that he had talent for drawing, I induced him to come to New York and learn wood-carving. He received only three dollars a week at first. This amount not being sufficient to pay for his board, etc., he had to borrow small sums, from time to time, until he owed sixty dollars. But at the end of two years he had paid off all his old debts and he has not contracted any new ones since. His prospects for the future are such that his friends have no reason to regret having advanced him the small sum of sixty dollars. Now, if some talented boy like the one that is here spoken of has no friends that are willing to advance him a few dollars while learning a trade which is suited to his talents, I think that our church missionaries or deaf-mute societies should step in and render the required help.

2. Chemistry is another field in which deaf-mutes who are intelligent, well-educated, and fond of study, might be encouraged to try their fortunes. I have taken great pains to obtain authentic information on this subject, and have learned that there is an ever increasing demand for young men who possess a knowledge of chemistry, and that such find ready employment in mines, sugar refineries, establishments for the manufacture of drugs, dyestuffs, etc. The salaries vary from one thousand to five thousand dollars a year. Several chemists with whom I discussed the matter, seem to think that a deaf man if he is otherwise qualified to take such a position, could obtain one as readily as a hearing person. In Passaic, N. J., there are large chemical works, of which a deaf and dumb gentleman has for years been the superintendent. He says that he has never had any scientific training, but commenced in the same establishment with some simple mechanical work, and gradually rose to his present position. There seems to be no reason why we should not encourage others to try and follow this example, provided that they possess such qualities as are requisite to insure success in a scientific calling.

We now have in the institution for the improved instruction of deaf-mutes, a congenitally deaf boy of fifteen years of age who is unusually bright, and very fond of books. He intended to become a printer, but, by my advice and suggestion, he changed his plans and decided to try to become a chemist. His father has made arrangements with one of our teachers who formerly was a tutor in the school of mines of Columbia college, and the boy now receives private instructions in chemistry four times a week. He has only just commenced, but he seems to comprehend his lessons so well that we feel encouraged to hope for good results.

3. Soon after we moved into our present quarters, I noitced

that one of our boys spent a good deal of leisure time in the engine room, watching the steam heating apparatus and pumps with intense interest. I asked our engineer to let the lad assist in the care of the boilers, and during repairs, which occasionally had to be made, and to teach him all he possibly could in regard to the work. The boy has thus become so familiar with the machinery that he is able to run it himself, and to handle tools well. He will try to get a place in a machine shop when he leaves school and become an engineer or machinist. In the future I intend to induce some other boys to do as this one has done, and thus prepare themselves for a desirable occupation without causing any special outlay to the institution. In the largest establishments for the manufacture of marine engines, in New York, a deaf-mute has been employed for years, and prized as one of the best machinists. Lately he has been transferred to Pittsburg, Pa., where the same firm owns extensive shops.

I do not intend, at this moment, to enter into a discussion of the question of industrial training in general, nor do I wish to give an exposition of my views on this subject; I will only say in concluding this paper, that in our institution we have never maintained workshops, and my experience has been that those of our pupils who had to learn some simple trade after leaving school, or to earn a living by working in factories or on farms, have always found places without any effort on my part. But some of those who were capable, and ambitious to become skilled artisans or intellectual workers, required a good deal of advice and assistance before as well as after, leaving school. I have, therefore, concluded that, situated as we are, we can do more good if we use the means at our disposal to prepare these few of our most promising boys and girls for higher callings, than if we maintained workshops for all of our pupils.

PROF. EDWARD A. SPRING, Director of the Chautauqua School of Sculpture and Modeling, was then introduced by the President, and spoke as follows:

MR. PRESIDENT—I have no special hobby to introduce, but to urge a very old process for finding out the best way of making things. One of the oldest things done, that we know of, is the representation of form in sculpture, and the use of clay in pottery. Clay has been used for many thousands of years to get at the easiest way of making things in more difficult substances. That is why the sculptor, to this day, uses clay to make his model in. Froebel, in forming a system which is accepted by some of the leading lights of the educational world as the best and most philosophical method of training the mind, has taken clay as one of the important materials to educate with, and the little children in the kindergarten do things which, if you are not familiar with kindergarten work, would surprise you.

I have just come from St. Louis, where the school board employed me for a short time to give a course of instruction to kindergarten teachers; and they were so delighted with what I have done in furthering the things that Froebel began by bringing the result of thirty years of practice as an art student in clay work to bear upon the kindergarten and upon education generally, that not only the kindergarten teachers got me to stay double the time for which I was engaged (and I went on with the course twice as long as I expected), but they want me to come again, and many of the teachers of the public schools have expressed the greatest interest.

There are hundreds of schools now in the country where my pupils are using clay modeling. I have had about five hundred pupils at Chautauqua, alone, since I began school there, four years ago, and they have spread the idea of clay modeling in education far and wide. I merely make these personal references as an instance of how the work is growing; but I know that in various countries, and in many parts of this country (without any reference to what I have done in the past ten years), the work of clay modeling, as a help toward drawing and a help toward art work, is very much increasing in favor and in practice. The whole world is aroused now by an art wave, and this country is perhaps the last to take up this interest; but we are rapidly approaching a time when there will be a great demand not only for teachers but for actual workers in this business. And my experience with the deaf-mutes eleven years ago, some slight experience in Boston at Miss Fuller's school, and at Northampton, and now, for a short time, at Jacksonville, Ill., in Mrs. Griffith's classes, has shown me that the average work of the deaf-mutes may be expected to be beyond the average beginnings of hearing people. I find the training of eye and hand is remarkable with the deaf-mutes. The most important point artistically, in modeling, in the art of sculpture, is the rendering of action and expression, by the relation of masses. The position and action of the head on the neck, for instance, is more important than the expression of the features, which are very small compared with the mass of the head. The nose is not much larger than the thumb, but the head is larger several times than the two hands put together, and it is that mass and its position in reference to the shoulders that gives the proper expression, the carriage of the head on the person's neck. This is a thing in which deaf-mutes are particularly quick to catch the meaning, and a great deal of the sign language and its power of expression is due to the position of the head on the neck, as well as the action of the hands. This gives them a training towards the very best elements of sculpture, and I think that there will be artists grow out of this work more than we now expect.

Later on, if there is an opportunity, I should be very glad to take a little clay and show you some illustrations of what I consider the value of clay work in language lessons. I do not expect that the world will ever see a great many artists but the increase of taste and the growth of the knowledge of art among the public will produce a high order of amateurship, and art workers will have a better place than those who do not understand the subject. But the importance of this work to deaf-mutes I believe is still greater than these possible employments as artists or art workers, in their education, in the teaching of language, and their education in general knowledge, and ideas which cannot be got at by them except by some visible and tangible form. There are a great many points in which drawing is only an explanation of what is already well known, while the modeling of a body is the thing itself, as far as the form is concerned, and geometry and morphology lie at the root of almost all our knowledge. I shall hope later, Mr. President, to have the chance of saying something more about this.

THE PRESIDENT—The discussion on these topics, as I understand it, or of this topic which has been presented by the two papers and the remarks of Prof. Spring, is now in order. I will ask Mr. Mathison, of Ontario, to take the chair.

Mr. Mathison then took the chair.

PROF. NOYES—Mr. President, upon the first paper in order, I have just a few words to offer, and I will introduce the subject by taking exception to Rev. Walter Smith's classification. I may not recall all the classes named, but he gives a class which he calls "Idiots." I want to make a point in regard to that class. I had a boy here in school for one year whom I feared was an idiot, or an idiotic boy, and had decided he was a proper subject for the idiotic school—had written his mother to that effect—and afterwards I had to change my mind. And the reason was, drawing waked him up. I have an assistant—I call him a tutor

—one of our former pupils, who has a natural aptness at drawing. I put this idiotic boy in his care. He had been in school, understand, almost an entire session and had not learned to write his name, or so much as to write "dog." I think the first dawnings of his intelligence came through drawing on the blackboard. While the other pupils were engaged in their sports, playing as children will when they have an opportunity, this boy would go to the large blackboard and would reach just as high as he could and begin making circles, and soon it was observed he was trying to develop his idea of a bicycle! He went through that operation a great many times, until he could finally draw a circle better than I could; and, finally, I discovered that he got in all the parts, even the brakes and little minutiæ and even a cyclometer. That suggested to me the way his mind could be developed. This teacher's specialty is to wake up the minds of dull children by rapid off-hand drawing. If he wanted to teach the word "dog" he would draw the dog with a great big tail, and the boy would look at the teacher, and the first thing we knew he was writing "d-o-g." He went on from *dog* to *mule*, and one day I went into the school-room and saw on the blackboard a picture of a dog on his back with his legs all curled up, flying in the air, away up on top of the blackboard, and a mule below with his feet about nine feet in the air, and a boy there, writing "A mule kicked the dog into the air"; and there was the picture on the blackboard. Now, just before term closed I wrote to that boy's mother that I would take back what I had said. I would not send him to the imbecile school; that he had learned to draw so freely and had learned to write so much that we would receive him another year. And the whole sum and substance of it is, as Mrs. Griffith has presented it in her paper, the dormant minds of many of our pupils may be developed by picture-drawing in the air and on the blackboard. And I certainly believe we have not heretofore understood the value of drawing in educating deaf children. It appeals to the sense of sight as no other method of teaching does, and for the younger classes it is almost invaluable. It is an easy matter for a teacher to call a pupil an idiot and ask to have him removed from the class, but it would be much more creditable to exhaust his ingenuity in testing the manual and sign methods and drawing, as already indicated, rather than doom him to a life of ignorance and imbecility. The ability and the success of a deaf-mute teacher are determined more by the progress of the lower third of the class than by the other two-thirds. Just here is where the late Prof. Carroll, of this Institute, was eminently successful. I have never known his equal with backward, dull pupils. The subject of drawing is so important that it would be well for all teachers to learn plain perspective drawing. It would not surprise me if in the near future this should be required of all teachers of the deaf. We are indebted to Mrs. Griffith for her excellent paper, and it becomes the principals and superintendents present to consider well the points made and see if we cannot get much needed help here in enlightening the minds of some of our most backward, ignorant pupils.

President Mott—I would like to ask of the Convention if imbeciles are not very apt to excel in drawing. I think Walter Smith, with all due deference, had better re-cast his classification before he dooms imbeciles to eternal ignorance, when this subject of drawing is before the community.

Dr. E. M. Gallaudet—I was about to add a word in that same line. I think we ought all to have correct impressions prevail. In years gone by, I sent several children from New York City to the institution at Syracuse. I knew Dr. Wilbur quite well, and from my personal observation of the results of that teaching, I know that that was a mistake. One of their strong points in that institution is to reach the mind of the so-called imbeciles and idiots by drawing, and in many cases (perhaps not all), that is a starting point with them, so that sweeping assertions about idots must be changed, it seems to me, if Prof. Smith wants to state the point correctly. I should advise him, and others who may have followed him, to look into these schools for imbecile children before they subscribe to that sweeping assertion, and class them under the head of idiotic persons, or persons who are unable to learn to draw.

Dr. I. L. Peet—Mr. President, there is another item in the paper just read, to which I wish to refer, and that is that it is supplementary to their own expression. A deaf-mute finds much more difficulty in the acquisition of the art of spoken and written language than a hearing child does. The deaf-mute child has but one teacher, the hearing child has a thousand; every person with whom he comes in contact is the teacher of the hearing child, while the deaf-mute child is limited to the one person who is devoting himself to that child, and it may be he is sharing that person's instruction with twenty other members of his class. It is one of the fundamental difficulties in deaf-mute instruction, that the deaf-mute child is so terribly handicapped in the acquisition of the knowledge of language that he has to do so much more than any hearing child ever has to do; so that, if the deaf-mute child reaches the same level with a hearing person, he is entitled to far greater credit, and when we find that any one is so handicapped, it is necessary that we should do all that we can to relieve his burden; and this is one of the things that helps to relieve the burden of the deaf-mute. You give him a new language, you give him a new power of expression. That is one of the arguments in favor of the language of signs, that he is able, through this language, to draw pictures in the air, and enable a person to understand what he wants, as Dr. Gallaudet did, when he traveled through Europe, without a knowledge of the French language, he was able to make everybody understand him, and had no difficulty. The sign language itself is nothing but a pictorial manner of speaking. It is in the order of pictures; the order of the ordinary sign language is in exactly the same order in which the artist puts his pencil upon paper. The first line of the sign language is the first line upon the canvass. And so the deaf-mute, having a pictorial mind, thinking in pictures, remembering in pictures, intending in pictures, working mentally through pictures, is better adapted for instruction in art than any one else possibly can be. And then, when he fails in language, when it is impossible for him to find words to express exactly his thought, if his hand and eye are trained for true representation upon paper, he is able to express his thought more perfectly and clearly. So that we are doing a great deal more for a deaf-mute when we teach him art, than we are doing for a hearing person, we are lessening his difficulties, we are helping him rise in the scale of being — we are giving him new hope and new possibilities.

Dr. Gillett — Mr. Chairman, I am greatly pleased with this discussion, it has given me great relief; I am quite satisfied I am not a paralytic, and it has been developed here this morning that idiots can draw—I never could draw a particle in my life.

A Member — Therefore, you are not an idiot.

Dr. Gillett — Like that class of pupils, Mrs. Griffith referred to this morning, I "belong to the rest of mankind." But this question has been one that has been of a great deal of interest to me, and, I think, upon a line that has not been developed here this morning. I, perhaps, have not an appreciation of "pure art." I understand what pleases me, but sometimes I have found that my criticisms on so-called works of art, when they came under the criticism of others, who were really capable of giving a just criticism, were all dissipated and that I was known to know very little of pure art. But there is another direction, sir, wherein this work in art impresses me as being very valuable, and that is that it is going to make better mechanics.

Now, I think my excellent friend Mr. Greenberger and myself would diverge a little on the shoe-making question. I confess I would rather be a real good shoemaker, as I think Henry Wilson was, than to be a poor dauber, and I would rather be a cabinet-maker, or carpenter, or blacksmith, than to be one of these nomadic individuals that is passing around from place to place over the country calling himself an artist when he is only a caricaturist. I am glad to see every opportunity for rising and excelling and getting into a higher arena of life opened to our pupils, but if, perchance, they do not make artists, in the sense that was referred to in the paper here this morning, when it was said "We don't expect to make many great artists," yet if they make persons who are living on a higher plane — a shoemaker, a farmer, a carpenter, or a blacksmith, if he is an honest and an upright man, and a pure man, is upon just as high a plane as any man that lives, whether he is superintendent of a deaf and dumb institution or a lawyer, or sits in the White House at Washington.

> "The rank is but the guinea's stamp,
> The man's the goud for a' that."

We want to get clearly in the minds of our pupils that while we don't expect to advance them to eminence when we want to offer every opportunity to them to approach to eminence as rapidly and as nearly as is possible, yet what we want to do with them is to make of them real, true men and women; and if it is necessary to do this in the common schools, it is much more necessary to use this instrumentality, in this age, whose power and strength has been illustrated here this morning, first in the paper read by the lady, and then, also, in a case mentioned by Prof. Noyes, of similar character; I say if it is needed in the common schools, for persons who have, as Dr. Peet says, a thousand (and we might say ten thousand) teachers, all through their life, from early morning till the last wink of night, and never without cessation, how much more important is it for us to get this aid and this help and this instrumentality for our pupils, who are cut off and deprived, in the order of Providence, of these advantages.

Now, I think I can see, sir, that the influence of this department—to say nothing of the work of the department itself (I leave that for Mrs. Griffith, she knows a great deal more about it than I do, she is the principal of that department and understands its details and work better than I do and can speak more intelligently than I can), but I think I can see very clearly what its effect upon the other departments is, and I think there are persons here who will corroborate what I say in connection with the other departments of the institution, that it tends to lift all of them up, and especially I think it is true in the mechanical department.

Now, as to the proportion of deaf-mutes who are likely to excel in a work of this kind: I think it has not been overstated this morning that the percentage is larger than will be found in the community generally, and it was intimated why this was probably the case—that, by force of their circumstances growing out of their deafness, they are obliged and compelled to study closely the significance of form, the significance of outline; and, as was said here this morning by Prof. Spring, with a great deal of force, that attitude and position have a great deal more to do with the power of expression in gesture language than we are accustomed to recognize as being the fact. Now, a deaf mute, we all know, has no language but gesture, he never can have any language but gesture. The language of the lips, to him, is a language of gestures. A gesture I understamd to be a motion or a movement intended and calculated to express meaning, feeling or thought, and that is the most powerful gesture which carries with it the most of feeling and the most significance of thought, and that which has the pathological principle embodied in it the strongest. All deaf-mutes will make gestures. There is a time coming when they will not, but it has not arrived yet; I apprehend, Mr. Chairman, that you and I will not see that time, but I know very well when it is going to be—not exactly how many years it lies in the future—but when it comes to pass that a fish will not swim in the water, and that a bird will not fly in the air, then a deaf-mute or deaf-mutes will not make gestures if they have an opportunity. They are bound to do it. That time I think is not very near before us, but the advantages they have after they have passed from the institution or its various methods of gesture is another question, but their language is a language of gesture, and they study this language of gesture with relation to the significance of form and significance of outline. That is found very aptly expressed on the flat in drawing; it is found expressed with a great deal more power in form and outline in sculpture or in modeling. There are are some children (and it is true among deaf-mutes, I think, perhaps more than among others) who have the principle of outlining and of form inherent in their nature, and so powerfully possessed are they of it, that it is impossible to keep them from exercising this expression of thought and this expression of feeling. You may endeavor to restrain it, but it is impossible. Why, every one of you has seen it in the pupils in your schools and in all the common schools; the language of outline and the language of form is the language of nature; it is common among all peoples; it is common among the savage tribes; it speaks to us to-day; the language of form that was put into expression by Phydias, talks to us in the most powerful, most touching, and beauteous expressions that come down to us from antiquity. It is founded in our nature, it always will exist, and it is impossible to restrain it. We see it in our classes, and other exercises are interrupted frequently, as the plan of the day had been arranged, by the irresistible propensity of these little fellows to give visible expression in outline to their thoughts and to their feelings. I think we get that stornger in modeling, perhaps, than in exercises in art on the flat. Now, I have a case of a young man who has been under Prof. Spring's instruction (Prof. Spring can probably speak of him with more accuracy and correctness than I can) who, without any instruction, except as it was given to him by Mrs. Griffith, took hold of modeling in clay himself, and he produced a life-sized bust, posthumous, of Prof. Waite, a few weeks after his death, that every friend of Prof. Waite knew the instant that he looked upon it. He produced also the bust of another person, and many recognized it, I think almost every one recognized it but one, who shall not be named in this presence here at this time this morning, and it was a life-sized bust. That he did with a few sittings, and the young man is meeting with a great deal of success. And the only difficulty I have about it is that he meets with too much success. If he did not meet with so much success, I think probably he would attain to better results.

Something has been said here about the process of education which is going on upon this matter in the public mind. Well, these children, after being in a deaf and dumb institution for a little while, get an education in art or in art matters, or perhaps I had better say an education of order, that is more than is possessed by the mass of the people at large; and I find that when these chaps go home for their vacation they find that they can make $10 or $12 a week in the use of the pencil, and that parents sometimes think "that boy is too valuable to send to school now, and we will just set him up in this town and he shall make pictures and he will have a good support, and so will the rest of us." Sometimes I find that principle of avarice gets possession of the individual homes or hearts, and, without remaining long enough under instruction to prosecute their education in this direction to a degree in which it ought to be done before they commence to work for themselves, we find ourselves interrupted very seriously by the fact that their success has been so rapid that they can already make a support by it.

There was something said about teachers. I remember a graduate, a young lady in this art school that Mrs. Griffith has spoken of, who for several years has been teaching in her home a class of persons who hear and speak. And then I think of another young lady, who left a year ago this last summer, who one year ago graduated from the institution and is making her support in teaching hearing and speaking persons in this direction. And I agree with Prof. Greenberger, here, that there is a great deal more opportunity for the exercise of their genius and ability in this direction than we have supposed. And I think it is incumbent upon us to do all that we can, and the people will sustain us when we show that we are doing the work well, and the trustees will sustain us when we show that we are producing satisfactory and valuable results. I know how this practical queston of dollars and cents comes in to annoy a superintendent, and the question of *cui bono*, and what it is going to give us, and where is the money going to come from? ButI want to say here, in the light of the experience that I have had, that it is easier to get money from the legislature and from the public and from trustees to do a good thing well—to get a large sum to do a good thing well—than it is get a small sum to do the same thing poorly. And if we have before us a high ideal, and our results are such as to justify it, we will always find the public, I think, coming along behind us that will sustain us and carry us on in this work.

I did not expect, Mr. Chairman, to say so much. I intended, when I requested Mrs. Griffith to write this paper, not to say anything about it. She understands it so much better than I, and I am so much pleased with the manner in which she has presented it this morning, that it is as much due to me as to you that perhaps I ought not to have taken as much time as I have. But I tell you I am interested in it; I can't help talking about it. I think it is a department that promises a great result for us all; it is going to help us in every department of life; going to put our pupils on a higher plain, and it is going to help them to be happier and to live a more enjoyable life than before. While the condition of deafness is largely a condition of isolation, if a deaf-mute can sit down to her water-colors and while away an hour pleasantly doing that which makes others happy, and something which is going to decorate and beautify home, it is going to be a great sphere of usefulness and enjoyment that they have not had before and that a great number of people have not had. And I tell you that everything we can do that will tend to compensate for the misfortune (it is a misfortune, now, it is no use to be hyper-sentimental about it—it is a misfortune; no one is better off for being deaf or unable to speak; it is a great misfortune), everything that we can do that will tend toward making their life happier and to relieve and ease the burden of the misfortune that rests upon them, I think we ought to do; and I think it is one of the best and most promising fields that lies before us now—the teaching of art.

Dr. Peet—Mr. President, I would like to give an illustration of the manner in which this method of expression, by means of pencil, may be made practical and interesting at the same time. Not long since there graduated from our institution a young lady who had a great deal of facility in the use of words but no grammatical facility. For instance, she knew the meaning of words and could read with a great deal of ease, but when she came to write, her sentences were not perfectly grammatical, and it was with very great difficulty that we could get the idea of grammar into her mind so that she would never make a mistake. She seemed to have a very considerable knowledge of language otherwise, and you could always understand what she wrote. It seemed as though she could not bring her mind down to the straight-laced condition which was necessary in order that a person should talk exactly according to the rules of grammar. And when she wrote, in her letters she would tell everything about the Institution and everything that happened, and every fact that she communicated in those letters she would accompany by an illustration, and so the pictures that the parents at home got were an exact view of life at the Institution. They got the idea of how such and such a teacher looked and how such and such a pupil looked and how things were done and how they were acted out, and it was one of the best illustrated histories of the Institution that was ever written, taking her series of letters all together; and it struck me that that was a wonderful supplement to the disability which this young lady labored under. I never could read over her letters (she usually showed them to me) without a great deal of enjoyment and a great deal of amusement, and I thought she did really better than a great deal of this pictorial illustration which we have in representing the tattooing of prominent men.

MR. DOBYNS—I would like, Mr. President, to suggest one question, and that is, what the average salary for such an assistant would be?

DR. GILLETT—I should think that a very practical question. I should think you could get a reasonably competent teacher for $800 or a $1,000. They are very cheap at that price. It is pretty hard to set a value on art works or on art workers. It is not always the best worker who is the best teacher. You find sometimes those that will teach others who will produce very superior results, who, perhaps, in themselves, will not produce such good results. You are not always to judge of the teacher, by any means, by the manipulations and the work they do. I should say, in answer to your question, $800 ought to get a good teacher.

PROF. NOYES—Mr. President, as throwing a little light on this question that the Doctor has been answering, in our smaller institutions if you cannot afford a separate teacher of drawing, I would suggest a plan like this: Obtain the services of a teacher of drawing who can also take charge of a regular class, and set apart certain hours, such as should be given to writing and such as you could give to articulation and other topics, and let this teacher, who is well posted in art, take the charge of the class during that given hour. The teacher of that class would instruct her or his class in the ordinary English branches while the art teacher is giving instruction in drawing. By this means you will be able to awaken in the children an interest in this department and accomplish something, and the time will soon come when the ability and interest, the sympathy and the feeling of the public will be such that you will be warranted in having an independent teacher of drawing. I will say that that is all that we have done here, and the interest in drawing and the department of art is very considerable. The little girl who did that picture on the wall, for instance, has carried home different pictures to ornament the house which she made while here. Several of those pieces in water colors in the work room and on exhibition that the ladies are anxious to buy, were made by the pupil who has given us that little sketch of the old building where this school first convened. And so you will find that these children are carrying that interest with them, and, as Dr. Gillett said, to some of them there is money in it. Some of them do not want to come back to school, thinking they have got enough already. We teach half an hour one day drawing, and the next day half an hour penmanship. We have one teacher, but, I am sorry to say, we do not pay her any $800.

Dr. Gillett—Better increase her salary.

Prof. Noyes—Sometime ago one of the directors said she ought to have more; we are going to give her more by and by, if some of these young men don't come and take her away.

Prof. Spring—Mr. President, my impression is that, if not at once, very soon a good teacher of drawing and modeling can be had as low as the average run of teachers of other branches, according to the degree of excellence; but I do not think that it is a branch that would require and incur special and undue expense in an institution. I think it will be a matter of course, in every school and in every institution of this kind, that such teachers will be employed.

Mr. Hammond—Mr. President, it perhaps would be a good idea if the teachers in the different institutions should themselves join a class and be instructed by a teacher in art. I would suggest also, that snperintendents might themselves do that, only of course they are too old and set in their ways to speak, or else they belong to one of those four classes spoken of this morning —I speak of my own experience—they are probably too set in their ways to acquire anything of that kind, but they probably might insist upon or make arrangements so that their teachers could get the advantage of it, at least to such an extent as that they could illustrate what they want in their daily work.

The President—Horace Greeley used to say that "the way to resume was to resume;" the way to get this into your schools is to put it in.

Dr. E. M. Gallaudet—Mr. President, the remarks this morning seem to be taking a practical turn, and I may perhaps be pardoned for making a suggestion which I did not think of making when this discussion arose, but if it is a precedent I hope it will not be regarded as a bad one. On my way to Minnesota, I had the pleasure of meeting a very intelligent young lady in Chicago, whom I know to be a fine artist, who has had experience in teaching in various branches of art instruction during the last year. She is a fine water-colorist, she paints on porcelain, she models in clay and produces those beautiful articles in porcelain, the greater part of which is modeling, and then painting is added. She is, in short, a fine artist. She has felt recently that she would like to devote herself to instruction in art, and meeting me in Chicago and knowing that I was coming here, she made simply this remark to me, that if anybody asked me about an art teacher, to be kind enough to remember her name. I have known her for a number of years, and I simply say here, that if any one wants to secure a fine teacher in art, in any of the institutions for the deaf and dumb, if he or she will confer with me on the subject I can give farther information. This young lady (the addition of whom to any school would be a source of great strength) is a hearing lady.

MR. SWILER — Mr. President, it occurred to me at the time Prof. Noyes made the statement with reference to the advisability or of the feasibility of securing such teachers in our institutions for the deaf and dumb, that they might not only give the regular instruction required, but also give instruction in art; that probably the time had come when, from the instruction received in this Conference or otherwise, those of us who represent institutions for the deaf and dumb, should go home and say to our boards of supervision and our boards of trustees, not that we cannot afford to secure a special teacher for drawing and art, but that we cannot longer afford to do without such a teacher. And the wonder to my mind to-day is, sir, not that instruction in drawing and art is being introduced in our institutions for the deaf and dumb, but that is has not more largely and more generally been introduced long ago. The public schools are coming to, and in many of our large cities have for sometime, realized the necessity of art instruction, and in our larger cities and in many of our smaller schools they are giving systematic and scientific instruction in the principles of art that is doing very much for the children in the public schools. As has well been said here this morning, if there be there a necessity for such instruction, there is here with us and in the schools which we represent, a very much greater necessity for it.

During this last year it has been my very great pleasure and privilege to introduce to more than 200 deaf-mute children in the State of Wisconsin such a privilege as is indicated by art instruction, and I must say to you that we have not in the Institution at present a department that is more popular, a department that is more appreciated, a department that is to a greater extent instructive and educational than is this department in art. Our school has suffered, and I imagine that other schools have suffered, in that thus far and thus long has this instruction been deferred; and in the light of one year's experience I can say that we in Wisconsin cannot afford to be without a special teacher in drawing. Were it necessary, in any degree, to curtail the expenses of the school, this is one thing that I should hold on to. Not that I regard it of more importance than sign instruction, than instruction in language, than instruction in articulation, but, as has well been said, it is one of the most forceful ways of expressing the ideas that are in the minds of the children we educate, and which in many cases have not hitherto had such or any means of expression. It has been not only directly a means of educating them in that regard but it has wakened them up to a perception of other things before not seen in the different departments in which they are instructed; it has given them a keenness of perception which enables them to size an object; it has given them judgment which enables them to determine with reference to the relative proportion of parts to a whole; and it has so developed in them a comprehension of further and higher possibilities as to greatly encourage and greatly stimulate them to their ordinary and regular studies.

Then, too, the time has come, I think, when the public need to be instructed in regard to the deaf and dumb in that though they may be defective in one regard, in that though they may be deprived, as in many cases they are, of oral speech (though we are coming more and more largely to see that there is a development there that sometimes always has not been appreciated) that in their perceptions, as for instance in writing and drawing, they are not, nor should they be, in any sense, classed with the defectives. In exhibiting specimens of the work done in the art departments of our institutions for the deaf and dumb, the wonder is expressed that such work could be done by a deaf person. Why, there is no wonder about it at all. There is no reason evident to my mind why they should not do as good work as is done by persons in the possession of all their faculties. But if we can demonstrate, as is being demonstrated, the fact that they are competent and able to do as good work as any do, better work than many do, we are in this much placing them upon an equality with hearing and speaking persons, and bringing the public to appreciate the fact that they have in possession, faculties that are equal to the best. We have, fortunately, in our institution at Delevan, two specimens of work done by students of our sister State Illinois. We have there a portrait in crayon and we have there, in relief, in plaster, a work that has passed the most critical examination of artists and critics who are competent to pass upon such work, who have without qualification expressed their appreciation of the work in the plaster and on the paper as being that of the very highest order. And it is an important thing that if in Illinois or in New York, or in Ohio, or in Iowa such work is being done as to command and deserve approbation, that it should be exhibited, that it should be displayed, so that the public in this regard, and the mutes themselves, shall finally perceive what possibilities there are before them.

In a word, then, I would say that this study of lines and forms, that comes from the elementary instruction given in our classes, where all or nearly all in the school receive the fundamental elementary principles of art, as exhibited in free-hand drawing, drawing from the cast or drawing from the object or from nature (which is the true principle), that this study of lines and forms corrects and improves perception, improves the judgment, deepens the understanding and broadens the mental view of our pupils in every quarter.

MR. D. GREENBERGER — Mr. President, while the Conference are collecting their thoughts and getting ready to continue this discussion, I would like to make a little explanation upon one point upon which I did not make myself quite clear in my paper, and that is this. Quite a number of my former pupils have become crayon artists, portrait painters, etc., but they have all done so without my advice, I have never advised a deaf-mute to become an artist. I advise them to engage in industrial art, to become lithographers, engravers, wood carvers, stone carvers, etc., but I have never advised any of them to engage in pure art, because I consider it too precarious, and I would no more think of taking a number of boys and telling them they can all become artists than of taking a number of boys and telling them they can all become poets. There are very few who have the talent to become artists, whereas, industrial art is something to which a great many deaf-mutes may aspire, with a prospect of succeeding.

Dr. Gillett — There is some young man, a draughtsman, that I saw at your institution a few weeks ago, I have forgotten his name. He came up to the institution I think on Friday. Prof. Noyes, you saw him.

Prof. Noyes — Yes, sir, I saw him.

Mr. Greenberger — Theodore Froelick. Yes, he was for six years one of the best workmen in the Photo Engraving Co. at No. 67 Park Place, New York; now, he has left that place and gone somewhere else. I had a conversation with his foreman a little while ago, when bringing another boy there, and he told me they would be willing at any time to give Theodore a fixed salary of thirty-five dollars a week. He refused to take that and works by the piece, and gets about fifty dollars a week on the average.

One of my boys, who is a crayon artist, came to me some time ago, in trouble; he could not get work enough, and he wanted to have a steady place in a lithographing establishment or something similar; and I told him if he had come to me for advice when he left school I would never have advised him to become a crayon artist. It is very fashionable at present, but I don't know how it may be in ten years from the present time. It is very true that the skill they have acquired will be very useful to them if called to engage in some other occupation, but it is better for them to engage in that occupation at once, an occupation which will always afford them steady employment and suitable wages. I went around with this young man that said he was in trouble and tried to find him a place, and while the matter was pending he changed his mind and he came to me saying that he had received more work in his line than he could do in six months. But this may all blow over. Crayon portrait painting is very fashionable at present, but I don't know how it is going to be in the future.

Mr. Mathison — Mr. President, I would like to ask Prof. Greenberger one or two questions. In his paper he stated that a number of persons engaged in these industrial departments in New York received $40 or $50 and upwards per week; I would like to ask if any of the deaf-mutes there are receiving any such amounts for their labors at present. In Ontario we have turned out quite a number of pupils, and I am sorry to say none of them have ever succeeded in obtaining quite so much money as that for their labor. In my last report I gave a list of some four pupils who were employed in various ways throughout the province who were making a good living for themselves, and some of the pupils were helping their relatives, but they were not artists—they were not even industrial artists, and we were content and thought we were doing an extraordinarily good work if we made them good shoemakers and good carpenters. Of course we have one or two or three who have been, and are now making a good living in art; we have one pupil who has distinguished himself as an artist, as a portrait painter, in the city of Toronto. We have one or two others who during this last term have shown decided talent in that respect. The difficulty, however, with one or two of them, is that when they get their minds set on art they want to be artists and don't want to learn the language—do not even want to learn as much language as they should have to get along in the world. I have had the difficulty suggested by Dr. Gillett—one young man, a most promising young man—and I advised his people to send him to an art school in Toronto to complete his studies. He is now capable of doing nice portrait crayon drawing and I fear he will not return to the institution. In our institution we have endeavored to place them in such positions that they would be able to make a living independent of their friends or aid given to them by anybody else. We have been more successful, I think, in turning out good shoemakers than we have been in turning out good artists. I can point to quite a number who are making good wages. A little while ago, last year, after one of our boys had completed his time in the institution, I brought him back another year and put him in the shoe shop, under a good instructor, and he put in nine hours every day, under the same rules and regulations that he would be under if he were in an outside shop. After getting through with us I got place for him with a master shoemaker, who advanced him on. A little while ago he got the Manitoba fever in the Northwest—he wanted to come out to this glorious country only a little farther to the north. He went to a place near Brandon, started a shoe shop there and afterwards sent for one of the other boys, and they are now both there, and carrying on a very successful business. But none of our boys make as much money as I hear of other deaf-mutes making in other places, and I would like to know how it is. There is an artist in Toronto—he is a first class portrait painter—I don't think he can make thirty or forty dollars a week; I think he said he makes ten or fifteen dollars a week. I have heard others speak about these artists and about their making so much money and the positions they take, but I don't see them, I cant't find them; I would like to see some of them; I would like to hear about some of them, and if there are any of the members of this Conference who know of any of those, it would rejoice my heart. I want to see them get up just as far as possible. It would rejoice my heart to know that they were making all this money. At the same time, I would rather that they would be good shoemakers and good carpenters and good machinists (and a good many of them are good machinists in our country), a good deal than they should be poor artists. In our country I suppose we have not got the good teachers that they have in Illinois and some of the other States, but I presume that this work of art will spread, I presume that the talents of deaf-mutes generally, will be brought out, but let us place within their reach something possible; do not hold out inducements that they are going to be great men and great artists, all of them. If a boy is not going to make a good artist but is going to make a good shoemaker, tell him he will be a good shoemaker, let him stick to that.

I didn't intend to say anything scarcely when I got up, but I would just like to ask Prof. Greenberger if he can give any number of instances of the deaf-mutes in New York who are making as much money as he stated that people in those walks of life could make.

MR. GREENBERGER — Mr. President, I have just mentioned a case, in answer to a question by Dr. Gillett. I mentioned the case of a young man by the name of Theodore Froelick, whose foreman told me (and I have no reason to doubt his word) that this Theodore earned about $50 a week by piece-work.

There is another boy, by the name of Emanuel Swain, in the large lithographing establishment of Munroe & Co., New York. He has been there for six years now, left school six years ago, and entered the establishment at once. Three years ago, he told me that he received eighteen dollars a week for his work. I have not asked him recently. He has grown up to be a man, and I feel a little delicate about asking him how much he earned a week.

There is another young man who left our school four years ago. He has a place on — well, it's not a very nice paper — *Puck*, in New York. He works there at a salary of twelve dollars a week. He has been there four years.

There is another young man who has been four years with Hurter Bros., a large furniture factory in New York, doing very fine work. He earns now about eleven dollars a week; he is paid by the hour.

Of those cases of lithographers who earn about $200 a week I am told there are only about half a dozen in New York. They are artists of rare skill. I know of quite a number who earn forty or fifty dollars a week. There is a large factory where they manufacture Russia leather goods, at 477 Broadway, New York, where a former pupil of the Vienna Institution, in Austria, is now the superintendent. I don't know what his salary is at present, but in 1876, shortly after he had immigrated here, it was forty dollars a week.

MR. MATHISON—Mr. President, my mind is very much relieved because of the cases cited by Prof. Greenberger thus ranging from nine to ten dollars up. I believe I can give some instances just the same, but there were such large amounts, above the possibility of them, that I thought I would like to know if there were any actually making these large sums.

MR. S. T. WALKER, of Philadelphia—Mr. President, I am very glad indeed that Mr. Mathison has asked this question. While Prof. Greenberger was reading his paper this question came into my mind and I settled it somewhat as Mr. Mathison has, and I think I have some foundation for that decision. There is no doubt but what every member of this Convention is interested in the subject of art instruction and approves of it, and if they have not already will probably adopt it in their institutions, but there is a great danger, I think, of deceiving ourselves as to the remuneration that may probably be expected of this work, after children have left school and gone out into the world to earn a livelihood.

I have been very much interested in this work myself and I have tried to get information concerning it. Mr. Greenberger has stated in his paper, as I remember his figures, nothing less than $1,000 (he has since modified the statement somewhat) was received as remuneration by graduates of institutions who had been taught in industrial art.

MR. GREENBERGER—I beg your pardon. I never made that statement.

MR. WALKER—You didn't mention any figures, but nothing less than a thousand dollars, as I understood it, was mentioned.

MR. GREENBERGER—No, the only thing I said about a thousand dollars was that some good chemists received from one thousand dollars to five thousand dollars a year. Chemists,—I don't know of any deaf-mutes that became chemists except that one that I mentioned in the State of New Jersey.

Mr. Walker—Well, I was under the impression; but I have ascertained, in two or three instances, by inquiry, as nearly as possible what these pupils are capable of receiving, and if I am rightly informed, I think that they will scarcely ever exceed twelve dollars a week.

Now, in Philadelphia, a few years ago, you all remember that there was quite an interest aroused in the subject of teaching lithography, and that Mr. Foster engaged a competent lithographer to teach the pupils in the institution in Philadelphia. That was carried on for a number of years. When I recently visited the Philadelphia institution (I went there to take a position), I was very much interested in that question and asked particularly of Mr. Foster what the results had been. He told me that they were very unsatisfactory, and so much so, that the teacher of lithography had been excused. And I asked him what the pupils were able to do after leaving school, and I think there was only one person of the whole class that was receiving anything like twenty dollars, say, a week, at the present time, while the majority of them had not carried on the profession at all, and some of them had gone back to the awl and the peg-hammer.

Dr. Gillett—They're gone up, then.

Mr. Walker—They're gone up, yes, sir. Further,—I had the pleasure of visiting the department of this work of industrial art instruction in the Philadelphia schools, the public schools, under the sepervision of Prof. Leland, who has been there for three or four years carrying on a department of this kind, giving a certain portion of the children of the public schools instruction, and it was a very interesting department to visit. There they had carved furniture—very fine work—done by the pupils—samples were shown visitors,—and beaded in brass and leather work, and clay modeling, and all these different departments,—very acceptable work. I asked Prof. Leland about the remuneration that these pupils were able to receive after leaving school, and he did not give me any figures that exceeded twelve or fifteen dollars per week. I could not get him to give an instance of a child who was receiving more than that, and the majority of them are not receiving so much; working their first and second year in the shops for almost nothing.

Now, I do not make this statement with the understanding that I oppose this work, I think it is a fine work, and that all institutions will adopt it in the future, but I do think it is wrong for us to hold out inducements,— I don't say it is intentional inducements or that they are wrong intentionally—but I think we ought to be set right with pupils in the institutions, as to what we may lead them to expect they may earn after they leave us.

MR. MCINTYRE—Mr. President, I did not intend to enter into this discussion—I have listened to it with a great deal of interest but I cannot help but add a remark or two, especially with reference to the preparation that we attempt to make for the duties of life of the pupils we receive. A great deal has been said about the cultivation of art (and very properly), and I agree with most of it, but I cannot help but think, in the number of pupils that I have had under me, of the questions that parents propose: "We want you to prepare this child for the duties of life; you have him, it may be, for five or ten years,— we want him prepared, that he may come home, when he is through with his tutelage, and may engage in the business of life that he may be able to make a living, that he may be able to enjoy himself, that he may be prepared for the duties that arise out of the relations which he sustains to the community." Now, I have in my long experience (for I have been a good while in this business) and with the number of pupils I have had, I have found that the greatest number of those that have been successful in making a support, and consequently who have enjoyed themselves best, have been those that have mastered some of the simpler arts of life. Shoemaking has been referred to; I think there are more of my pupils now that are making an independent support by that that they have well learned. But little time in a school, aside from the regular studies, can be devoted to art; if you devote their whole attention to art, or their principal attention to art, the question arises among the parents of these children and their friends, "What are they to do? How are they to make their living? Because the large majority of the community have to work for their living." That is true, and they cannot make money and obtain an independent support unless they are trained in some employment. Now, the large part of all communities are laborers, and these pupils that come up here come up very largely from the laboring classes. Well, if they can step one step higher than a mere day laborer, and have a business, learn a business that they can carry on and make a living, they can settle down in life and support themselves. Well, now, looking back over the history of deaf-mute instruction, and looking at those that are alive to-day that have been educated in these institutions, of the large number of those that are successful, I think nine-tenths of them are those that were taught habits of manual labor and industry of some kind, in the institution; and you will find that fact all over the country as you travel over it. You go down to Pittsburg and you will find fifteen or twenty engaged in the different shops that were educated and taught habits of industry — not all of them following the same trade that they practiced there, but they had acquired that habit of manual labor that when they went out to do for themselves, and were separated from their friends, they were able to make a living; and the unsuccessful ones, as far as my observation has gone, have been those who have engaged in an employment that there was no market for their productions. There are failures all over the country of that kind. But I will not prolong this discussion, as it has been well presented and I have been very much entertained, but I think there is not enough attention, in the observations that have been made, to the simpler mechanical operations. Now, it has been proven, in all the older institutions, that the simpler trades, and even shoemaking, as much as it may be despised by some, is a trade that will last as long as shoes are worn, and a boy coming to the institution and spending but little time, say two hours a day, at the end of his course, can make a good boot or shoe and he can go home to his friends and to his neighborhood and by the aid of his friends and the patronage he will receive can set up a shop and make good wages — ten dollars a week, twelve dollars a week — or as much as he will at any half-learned employment of art.

Mr. Crouter — Mr. President, I most thoroughly agree with Dr. McIntire, of the Western Pennsylvania Institution, in his presentation of the matter of art and mechanical training in our institutions. It does seem to me that for all practical purposes our institutions can afford only to give instruction to our pupils in the simpler trades, — shoemaking, tailoring, cabinetmaking and carpentering. It is a fact that the most of the pupils, the most of the graduates of the institutions, after leaving, engage in some of these simpler occupations; and in institutions where an attempt has been made to train them in art, so far as I am informed, the instances where the graduates have successfully prosecuted their knowledge of this kind of work are very few.

In Philadelphia, Pennsylvania, as Mr. Walker has just stated, we attempted to instruct our boys or those of them who seemed the most promising, in lithography. Mr. Arms himself is a very thorough artist; he is employed in one of the larger lithographic establishments in Philadelphia and, I believe, receives a compensation of from thirty dollars to forty dollars a week. Of the boys that were under Mr. Arms' instruction (numbering about fifteen), and for a period of about five years, there is only one boy who is now following lithography. He is engaged at a large lithographic establishment in the city, and receives, I think, about six dollars a week. He told me, the last time I saw him, that that was all that he was receiving. I presume in time he will get better wages, because he is a very good artist. It does seem to me that we cannot afford to give our pupils accomplishments.

In this matter of teaching them art I think it would be well to train them in mechanical or linear drawing, which would help them in almost any kind of occupation. It would help them in their work as carpenters, as shoemakers, as tailors, as cabinet-makers. There are only a very few, however, who can become successful artists, I mean in the highest acceptation of the word.

Dr. Gillett — Why was that a failure? I saw some work produced in your establishment that I thought was very creditable.

Mr. Crouter — Simply because it was found that while the boys could, to a certain extent, prosecute the work necessary to become lithographers, when they reached a certain point they failed. They do not have that delicacy of touch, that taste in art, in order to make thorough and successful lithographers.

Mr. Greenberger — Is that because they are deaf?

Mr. Crouter — No, I won't say it is because they are deaf.

A Member — Did you select your boys out of those that had a taste for it?

Mr. Crouter — We selected those boys that had a taste in drawing. We had, for some time, a teacher in drawing (I must say, not a very good one), and those boys that showed the greatest proficiency in simple drawing were instructed in the class in lithography. We had everything necessary to instruct them. They could copy very well, but when it came to doing the nice work — the best work — work which would enable them to support themselves after they left the institution — which would take them into lithographic establishments and give them from perhaps six to eight and ten dollars a week, they failed. Two or three of the boys attempted it, and only one has been able to retain his place. I think we ought to be careful in this matter of introducing art into the institutions.

MR. WALKER — Mr. President, I do not want the people here to understand that I oppose the adoption of this art work in our institutions at all. I think, if a boy can learn to make pictures sufficiently well to command from six to ten or twelve dollars a week, and he prefers that occupation, that by all means we ought to help him to do that; but if he prefers making that money by shoemaking, why I say let him do that. We ought to have these departments in all our institutions, I think.

MR. CROUTER — Well, I don't wish to be understood as being opposed to instructing our pupils in drawing or lithography or any other branch of art, I simply wish to say that we are not making successful artists of all of our boys — we can only succed with a very small per cent of them — and whether it will pay to attempt to introduce art on such a large scale, for the very few boys and girls who do succeed is the question.

I wish to say, too, in connection with this, a very interesting incident occurred at our oral branch, during an examination, I think in April. We were testing one of the classes in regard to their ability to express thought either orally or in writing. One of the boys was quite unable to express a certain thought which was given to him either by writing or orally; it was just simply this: Mr. Biddle, one of the members of the committee, stood before the boy and raised his foot, thus; he asked the boy to tell him what he had done. He could not do so. He then asked the boy to write it on the slate; he could not do that. Mr. Biddle insisted on the boy's expressing, in some way, what had taken place. He turned around and on a large slate drew an outline of a man raising his right foot, that way.

DR. GILLETT — That was good.

MR. CROUTER — He could not express the thought orally, because he was unable to, neither could he do so in writing, but he did it in that way.

DR. PEET — I would like to ask Mr. Crouter one question in this connection, that if the thought he wishes to lay emphasis upon is this: Not that we should not have it taught in the institutions, but that it should not be taught to the exclusion of mechanical instructions.

MR. CROUTER — My idea is that it should be taught in its simpler form, and in connection with mechanical training.

MR. SWILER—Mr. President, as bearing on this question, if it would be in order, I have a resolution which I would like to introduce, voicing the idea of this convention on art education:

Resolved, That it is the sentiment of this Conference that the importance of art instruction, as related to the fundamental principles of the education of deaf-mutes, is such that systematic instruction in drawing is demanded; and that it is recommended that in all cases where it is practicable, special teachers in drawing be employed.

DR. E. M. GALLAUDET—Mr. President, I do not rise to speak to this resolution, but simply to say that the time is drawing near when an adjournment would be quite necessary of this morning's session, and I would suggest that the discussion on this whole subject be now limited to about five minutes more. That would bring us to between twenty and twenty-five minutes of one o'clock, and that would I think be hardly too early to adjourn. I therefore move that the discussion on this subject be closed in five minutes.

DR. GILLETT—Mr. President, I simply want to say, about that resolution, that there is no conflict between an art department and a mechanical department. I never excused a pupil from learning a trade because he was in the art department. I require them, every one, to learn a trade. If they can take a trade and then in addition to that propose to give them the opportunity of learning to draw and to execute sculpture if they can; but one in no sense conflicts with the other.

THE PRESIDENT—Well, that is art, isn't it?

DR. GILLETT—Yes sir, it is; but they will make better mechanics, I insist, because they are all taught these operations and these various relations. There is no more conflict between the art department and the industrial department than there is between the art department and the intellectual department.

DR. PEET—I do not quite agree with Dr. Gillett; there has been a depreciation in the art department, and I would offer an amendment as follows: "Also that the mechanical departments of the institution should be in all cases cherished for those who wish to learn trades."

PROF. SWILER accepted the amendment.

DR. THOS. GALLAUDET—I would suggest, Mr. President, whether the time has come when it is unnecessary to adopt any resolution in the conference. Why should we be bound down to any resolution? It is the custom, in some bodies that come together to discuss various matters, to do away with that sort of thing. We discuss the matters coming before us, and it may be that some prefer one thing and some another; I think there is a good deal to be said on both sides of the question. If we can agree in formulating simply our ideas, perhaps that is very well, but I know, in a body like this, it is hard work to get up a resolution that will formulate the ideas of the whole body, and I for my part would prefer that we should not be bound down by any resolutions. It is a good precedent to establish in bodies of this kind, that we discuss the subject, and let every one get the benefit of it, and then go home and do the best we can.

PROF. NOYES—Mr. President, there is one art that some of us, perhaps, know very little about. Sometimes it is claimed to be one of the "lost arts," and I have been puzzling my brain for some time to get some one to help me introduce that art—I mean the art of cooking. I have not been able to introduce it yet; but soon I will ask you to discuss practically a little work of that kind—whether it is a success or not I will not undertake to say. If it is agreeable to the Conference, I would like to introduce here the resolution I was required to prepare this morning.

THE PRESIDENT—There was a resolution upon which you heard the remarks of Dr. Peet.

DR. GILLETT—Mr. President, I agree with Dr. Gallaudet, I think we had better dispense with the adoption of resolutions on any subject.

THE PRESIDENT—On disputed points, oh yes, but we want to adopt resolutions of thanks, etc.

DR. GILLETT—I don't see what we are to gain by it.

MR. DOBYNS—Mr. President, when I go home, if I should want an art teacher, and should say to my Board of Trustees, I would like to have such a teacher, and the Conference of Principals has recommended it, if we do not have the resolution, we shall have to read over four or five pages of the record to find out what the Conference thought about it, and they are not going to do that. If we adopt a resolution saying we think it very necessary, it will be a very easy matter to get at it.

THE PRESIDENT—Have you a Board that pays any attention to the resolutions of deliberative bodies?

MR. DOBYNS—I have a Board that would not read three pages of this discussion for any man, but they would read a simple resolution, and it might influence them to some action that would be for the good of the institution. I am in favor of the resolution.

PROF. SWILER — I thought, Mr. President, that it might, in certain quarters, do a great deal of good, and might have an influence in introducing more rapidly and satisfactorily an art department in the schools where it now does not exist. My thought is, sir, that there is nothing in this resolution that can in any way conflict, or in any way antagonize any interest which may obtain here in any event. It bears especially upon the fundamental principles of the education of deaf-mutes as related to their instruction in language, and in no way conflicts with the prosecution of industrial pursuits.

THE PRESIDENT — Gentlemen, the question is before the Conference upon the adoption of the resolution offered by Prof. Swiler.

MR. GREENBERGER — I move that it be laid on the table.

DR. PEET — I would amend by moving to lay it upon the table until this afternoon — that the discussion of the question be postponed.

The motion to lay upon the table for the present was adopted.

MR. CROUTER — Mr. President, I would like to state, for the consideration of those who are here desirous of seeking or obtaining the services of a teacher of art, that there is a lady in Philadelphia, now attending the academy of fine arts, who is desirous of securing a position in some institution in this country where she can give instruction in art, particularly in modeling clay. She has had some experience in a sign institution and has a very good knowledge of signs, and I think to any person desiring such a teacher she would be very valuable.

PROF. NOYES — Mr. President, I desire to offer the following resolution:

Resolved, That Messrs. Job Williams, of Hartford, Conn., A. L. E. Crouter, of Philadelphia, and J. W. Swiler, of Delevan, Wis., be appointed a standing committee, to whom papers and manuscripts laid before this Conference for consideration and publication be referred.

I do not here refer to papers that are to be read and discussed, but to those that are sent in for examination and publication by this body and may not be read before us.

MR. CROUTER — Mr. President, I am informed that at the last meeting of the Conference, held at Northampton, there was a committee of similar nature formed of which Mr. Hammond is now the chairman, and I think all such papers can very properly be referred to that committee.

DR. GILLETT — The committee has not yet been excused but expires with this Conference.

Thereupon the resolution of Prof. Noyes was adopted.

By consent, Prof. Swiler was excused from the committee on examination and publication, and Prof. Hammond was continued in that position.

The Conference then adjourned to 2.30 o'clock, P. M.

AFTERNOON SESSION.

The afternoon session of the Conference was opened at 2.30 o'clock, with Vice President Covell, of West Virginia, in the chair. The chairman of the committee on order of business reported the following as the order of business for the afternoon: A paper on the causes of deafness by Dr. J. F. Fulton, of St. Paul, with a discussion upon industrial work, and the best trades to be taught the deaf and dumb, and the practical value of articulation to the deaf in the prosecution of business. For Friday morning, a paper by Job Williams, of Hartford, upon "A system of instruction adapted to all deaf-mutes, not excluding the feeble-minded."

DR. J. F. FULTON, of St. Paul, then presented the following paper:

Mr. Chairman, I am very glad to have the pleasure of making this communication to those whose occupations bear such a close relationship to that of my own.

The wider the experience of the otologist the more he learns to appreciate the great importance of your most noble work. While otology has advanced with wonderful rapidity during the past few decades it is very gratifying to notice the improvement in the teaching of our hopeless cases. So long as there remains a tendency for the child to inherit the infirmities of the parent, and humanity is made subject to diseases which are capable of destroying or paralyzing the nerve centers without destroying life, so long will there be an abundance of material for the institution of the deaf and dumb. I have the most unbounded confidence in the future progress of otology, but there need be no fear that the otologist will ever rob the teacher of the deaf and dumb of his or her occupation.

It often happens that the conscientious and Christian physician, after he has done all in his power to relieve a fatal disease, gives the case over to the hands of the minister to prepare the way for happiness in the world which is to come. While this does not often happen to the aurist, yet it happens not infrequently that it is necessary for him to give his cases over to the instructors of the deaf and dumb to prepare them for usefulness in the world which now is.

Any aurist who has had a child brought to him for his opinion as to the probabilities of its obtaining its hearing or speaking, and who has seen the expressions of disappointment and despair in the mother's face as she hears her worst forebodings confirmed, must have felt the great importance of the education of such. It is a great relief to be able to tell the anxious mother that the child can be educated so that its life will be useful and happy. The lot of the uneducated mute is sad indeed. Intercourse with humanity being cut off—unable to obtain instruction and amusement by such intercourse or through books—he is left to "Nature," and becomes a victim to his own appetites and passions. Careful dissections of the brain of mutes on the part of the aurist has proven almost conclusively that the minds of mutes are as capable of receiving and retaining as much intellectual knowledge as their hearing associates.

But what are the causes of muteism? What gives rise to the conditions which fill these great and grand institutions? According to the time at which the loss of hearing takes place we distinguish between a congenital and an acquired deaf-muteism. It is not possible to tell always if the deafness existed at birth or came on during the first or second years of life, as the statements of parents on this subject are not reliable. So I think it better to apply the term *acquired* to those who have lost their hearing after they have learned to talk. It is said that mountainous regions abound in deaf-mutes, but the plains and low countries seem to enjoy relative immunity. Be this as it may, it is certain that different countries vary greatly as to the number of mutes. According to statistics, among 10,000 people upon the continent 7.77 are mutes. In the Netherlands and Belgium (you will notice the contrast) 3.35 are mutes, whereas in Switzerland the highest number, 24.5 are mutes. That is, in every 10,000 inhabitants. In America, the proportion is still lower, being 3.82.

In regard to the time of life that individuals will retain their speech after having lost their hearing, their is a difference of opinion. One author feels certain that children up to the eleventh year always lose their speech soon after having become deaf from any form of disease (some even within six months). And, according to the degree of deafness, they lose it wholly or partially. In most of the cases of those who have already learned to talk, a loss of speech from loss of hearing occurs in the fourth year, occasionally even up to the tenth year, and only in extremely rare cases up to the fourteenth year. Up to the age of puberty the methods of the formation of words are not so firmly fixed as they are later in life when the deafness may interfere with, but cannot wholly destroy the ability for their formation.

Another author says, "Children who can already speak may lose this ability if they become deaf, any time up to the seventeenth year; even from the eighth to the ninth year, the loss of hearing may make the speech very imperfect."

In regard to the anatomical changes of the diseases which cause absolute deafness but very little is known, (that is, but little is yet known in regard to the pathological anatomy of the parts), although quite a number of *post mortems* have been made by competent pathologists. And here I wish to make an appeal to those in charge of these institutions of learning to improve every opportunity to furnish material to the aurist, so that he may investigate the real cause of these very interesting and vastly important diseases. A careful, accurate and scientific *post mortem* should be made upon every subject that can possibly be obtained, as it is only by so doing that the disease can be clearly understood. Some of the few conditions already found are as follows: Closure by adhesions of the walls of the middle ear, known in technical language as bilateral atresia of the auditory meatus and of the tympanic cavity; absence of parts of the fenestra; arrested development of certain portions of the ear as of the semicircular canals of the labyrinth; purulent inflammatory processes of the internal ear.

The causes of the acquired cases are closure of the external canals; purulent inflammation of the middle ear, with exfoliation of the small ossicles and destruction of these little bones; destruction of the labyrinth; tight adhesion of the sound-conducting chain; chronic catarrh of the middle ear, giving rise to the formation of new tissue filling up the cavity; purulent inflammation of the internal ear, extending the same inflammation to the middle ear; inflammation of the auditory nerve; the results of meningitis and cerebritis; and the filling up of the middle ear with bony tissues has been found in a few cases. The acquired cases of muteism are caused usually, therefore, by diseases of the middle and external ear; diseases of various nature, destroying the functions of hearing before the victim is able to imitate speech. There is no change of the larynx in these cases to prevent articulation, as has been supposed, except those changes which come from disuse of that organ. Unfortunately the causes given to superintendents of deaf and dumb institutions and even to physicians, on the part of parents, are rarely ever reliable. Too often we find on the record book such causes as these: "Colic," "Burns," "Intestinal obstruction," and various other causes which can easily be seen to come only from the imagination of superstitious and ignorant people. Hence, knowledge from this source is not reliable.

The inter-marriage of relatives is supposed to be one of the chief factors in the production of congenital deafness. This is a question of great interest and importance. It has been overrated by some writers and under-rated by others. One author regards this as the cause of twenty-five per cent of the congenital cases. Hartmann, of Vienna, regards it as eight and one-tenth per cent, and Mitchell of six per cent, but recent statistics shake our confidence in this somewhat, although, on the other hand, it is certain that muteism is quite common among the Jews. We have been informed by Hartmann that a certain part of our own country, which is isolated somewhat and inter-marriage of relatives is the rule, produce an unusual number of mutes. Dr. Roosa of New York has investigated this subject somewhat carefully, and while he admits that a number of cases come from this district (somewhat larger than the usual proportion) also quite a number of imbeciles and cases of weak-mindedness and various other malformations have presented themselves.

In regard to the hereditary tendency much interest centers. It has been noticed, however, that the direct tendency of the transmission is not so common as that of a peculiar *family* tendency. When both parents are mutes hereditary muteism is not the rule, but on the contrary, congenital deaf-muteism is often seen in several children of one family whose parents are not mutes. Statistics show that the father is more apt to transmit the malady than the mother; and a number of mutes have been noticed in one family in which there had been no trouble in the hearing on the part of the parents at all.

While as aurists we have but little practical interest in the mode of education of deaf-mutes (a description of which forms so much of what is said about them), we are exceedingly anxious to ascertain the seat of the lesion which causes the trouble as well as the exciting cause of the aural malady which destroys the hearing functions. The tuning-fork has done much to aid us in the fruitful investigation of this subject, but what is more needed is more careful dissections.

Now, in regard to the exciting cause, I do not think I can illustrate the subject better than by analyzing 147 cases which come from the very best authorities. Of these 147 cases, 44 were born deaf, that is, there were 44 congenital cases; 27 were caused by cerebro-spinal meningitis, 16 by scarlet fever, 13 by brain fever 4 by meningitis, 7 by measles, 7 by accidents, such as fall on the head, 7 unknown, 4 by convulsions, 3 by hydrocephalus, 3 fever, 2 whooping-cough, 2 mumps, 2 from pneumonia, 1 from some constitutional disease. The whole subject may be summed up thus: Acquired deafness is not so often caused by primary affections of the ear as by inter-cranial processes and general diseases. First in importance is epidemic cerebro-spinal meningitis, simple meningitis and hydrocephalus; second, the acute infectious diseases, as typhus fever, scarletina, diphtheria and measles; and, lastly, primary diseases of the ear, such as a purulent inflammation extending to the labyrinth, and traumatic injuries of the auditory nerve.

It may be said, in conclusion, that the prognosis is more favorable in the congenital cases than in the acquired. Some well authenticated cases have been reported of spontaneous improvement, ending after a time in normal hearing. One very interesting case has been reported by Hartmann, another by Politzer. This latter case acquired normal hearing. This can easily be explained when we take into consideration the fact that a very slight trouble in the middle ear may prevent a child from imitating speech. This, by the processes of nature, may be absorbed, and the child obtain its hearing. "On the other hand," observes Politzer, "I have never observed any improvement in a single case of total deafness acquired in consequence of scarletina or diphtheria, giving rise to other peculiar inflammatory processes of the middle ear, or in cases after meningitis or hydrocephalus."

It is quite evident, therefore, from what has been said, that our knowledge of the cause of deaf-muteism is not yet an exact science. Here is room for faithful research and diligent investigation. It is necessary for us to have a better knowledge of the anatomy and the physiology of the organs of hearing, and the pathology of the ear, before all these great practical questions can be answered.

The President — Discussion of this paper is now in order.

Dr. Peet — Mr. Chairman, this subject is one of interest and importance to all the friends of the deaf and dumb, and it is to be hoped that the parents and friends of deaf persons will co-operate with physicians in giving the opportunity, after death, for those researches which seem to be necessary in order to discover hidden conditions and causes. It is a very important matter. If we can promote the good of our fellow-men by discovering something which is hidden to the ordinary ken of the physician, it is the duty of parents always to assist the physician. I look upon that one thing, if no other, as a matter of primary importance, in a benevolent point of view. It is an absurd idea that so many persons have that the body is not to be tampered with after death, and it is a great mistake, when it is known that certain matters will be revealed which cannot be revealed under any other circumstances, when there is a body of men especially interested in a special class of our fellow-beings, desirous, if possible, of preventing this calamity which brings us together as fellow-workers for the good of humanity. If we can produce this impression upon the minds of the public we shall not have met in vain; and I am, therefore, very glad that our learned friend has brought out that matter, among others, in connection with the discovery of the causes of deafness. My own observation has led me to the belief that he is right in his opinion that there is more likelihood of hearing being brought about — restoration is hardly a proper term where hearing has never existed — you cannot restore hearing where it has never existed; but the term restoration is a common one to use in that connection, the hearing cannot be effected through human instrumentality to such an extent in the case of acquired deafness as in the case of congenital deafness. There have been at least two well-authenticated cases in our institution, and, I think, really, a good many more, where the pupils from being so deaf when they entered the institution that they did not know a word of the English language have arrived at a point where they could hear very distinctly, and where the ear seemed to have come to a normal condition, and where it required education in order to make the hearing available. I know of one case in particular, a young man, who was deaf when he entered the institution, as a child nine years of age. He could hear nothing, speak nothing, knew not a single word in the English language, but he afterwards became an excellent scholar and is now one of the teachers in the institution. His hearing has grown from year to year until now there is not a sound that you can say to him, whether you stand in front of or behind him, that he cannot imitate perfectly; and when I have pronounced words that I knew he was familiar with and he has spoken them after me and I have asked him "What is the meaning of that word? What did I say?" he would reply, "I don't know." He would say the word after me, pronounce it correctly, but was unable to tell me the meaning of it. I would spell the word with the manual alphabet, and he would say, "Oh, is it that? I didn't know it." And so he has become more and more educated to the sounds of the English language, and I think eventually he will become exactly like other persons, so far as hearing is concerned.

I know of another case that graduated some years ago who, from being apparently totally deaf, became restored almost entirely to normal speech and hearing; and his education of the ear was very much like that of the other case. I presume there are a great many more cases that we do not notice, from the fact that, although the pupil is hearing what is said, and although he can hear and even imitate sounds, unless the ear is specially educated it is not discovered because he does not know the meaning of the sounds that are uttered in his presence, that he is becoming a hearing person rather than a deaf, through the processes of nature.

I have supposed that this deafness was caused by want of development, and that the restored hearing resulted from a further development after birth. I may be very much mistaken, because I am only a layman in that matter. The idea of some obstruction, which was only temporary, and which was absorbed, had not occurred to my mind before,—it is a very interesting point; but I would like to ask the Doctor if he thinks there is anything in the idea of development subsequent to birth?

Dr. Fulton—That idea has scarcely ever occurred to me before and yet I can see that the point is a very good one and that it is perfectly possible that it might occur. The point that I hinted at in the paper was this: that a child might be born with a condition of the mucous membrane of the middle ear, for instance, which would interfere with the vibration of the ossicles and acting in a mechanical way; it may not be perfectly deaf, and yet deaf to a sufficient extent so as to stupefy—so it will not acquire the habit of listening to sounds. In the course of time the material becomes absorbed, inflammatory material is taken up into the circulation, the mucous membrane becomes thinner, the ossicles receive room by which they can attain their normal vibration, and the hearing of the individual will take place. But in regard to the question which you introduce—it is very important because we can easily see how that by at first sounding loud sounds into the ear, the sense of hearing will become more and more acute, and finally come up more nearly to a normal standard. The case you report, also introduces the very close relationship which should be constantly brought about between the aurist and the superintendents of these institutions, because there are only two well authenticated cases reported in medical literature of recovery in congenital cases. One is reported by the authority which I have already mentioned, Dr. Hartmann, another by Dr. Politzer,—Dr. Hartmann, of Berlin, and Dr. Politzer, of Vienna. But doubtless many other cases have occurred under the observation of superintendents which have never reached the ear of medical writers as they should have done.

Prof. Noyes—Mr. Chairman. I would like to state for the benefit of the members of the Conference, that for quite a number of years it has been our practice here to receive visits from three or four specialists every school year—by Dr. Fulton and his predecessor, Dr. Atwood, (a man of noble memory), also Dr. Thompson, all of St Paul—all specialists in their line. Their visits have been for the purpose of examining the ears of all the children here. They have also visited the institution for the blind and examined the eyes of the pupils there. I presume all these superintendents know how many times parents who are anxious that the hearing of their children should be restored, put themselves not only to great inconvenience but to great expense, in, I might almost say, experimenting upon the ears of their children, in the hope that they may have their hearing restored. Now, these gentlemen specialists, among them Dr. Fulton, have come here from time to time, and (I want to state, gratuitously) have given their time for the purpose of examining and pronouncing upon the condition of the ears of these children and upon the eyes of the blind. The object has been to satisfy their parents. I state to them, in my little leaflet that goes to them, that these gentlemen will examine their children and report; that if there is a case that is in any way hopeful, the parent shall have the opinion of the specialist and they shall in due time have an opportunity to have the child properly treated. If the expert pronounces the condition of the ear hopeless, I make a record of that. And it is a source of great satisfaction to me to have one of these specialists come here and determine the matter one way or the other, so that I may say to the parents of these children, "There is no use of your experimenting on these children or of spending money upon them; here are gentlemen that are competent to decide, and they say that this case is a hopeless one, and, therefore, simply a little treatment—if the ear is running, or anything of that kind—a little application that will heal it up and put it in a sound condition, is all that is needed." It is hard to come to that conclusion, but that is the most sensible way to do, in a great many instances; and I think it is a subject that is worthy the consideration of all these gentlemen that are interested in this work, that someone should examine the ears, or the eyes of the blind, and be able to give an intelligent, sensible opinion, and so shut out the quacks.

I had a nice little boy last year that was kept at home for months, or at least a month and a half, and the only object was just for some quack to experiment on his ears, and when he came back here he didn't want anybody to come near his ears because he thought he was going to have another excruciating operation performed.

Now, physicians like Dr. Fulton and his predecessor have made these examinations voluntarily and gratuitously, and I feel that this institution is under great obligation to these gentlemen for doing this, and the parents of these children as well. I think, in looking out for the welfare of these children we ought to do what we can in reference to giving the anxious parents a true statement in reference to their condition.

A MEMBER—Mr. President, I would like to ask Prof. Noyes this question—if he ever found any that by that treatment were benefitted?

PROF. NOYES—Well, sir, by the last examination made by Dr. Fulton, he thought, in one case, that there was one ear that might be improved; and I sent the boy home to be treated right away, but as to the result of that I am unable to state. The doctor is, I believe, to examine that boy's ear, and do something for him during the present vacation.

A MEMBER—He has received no benefit, eh?

PROF. NOYES—I have not heard, sir.

DR. FULTON—He has never reported.

PROF. NOYES—The boy has been experimented upon so many times that I suppose he is unwilling to go and that the parents are unwilling to force him.

Now, there is one other point. I feel under obligation to Dr. Fulton for preparing this paper and coming here, at his own expense, for the purpose of showing his great interest in this subject.

The point that he spoke of, with reference to the condition of the congenitally deaf, reminds us of the interesting point that was developed in the convention recently at New York—that there is not only a possibility but, as we have had it already illustrated, that there is a probability that in a number of cases, and in a larger proportion of cases than heretofore estimated, I think, there may be an improvement in the sense of hearing; more especially in regard to those who are congenitally deaf—such cases, for instance, as Mr. Gillespie brought out in his work, in Nebraska, and perhaps Miss McCowen, in Chicago. And I would like to state here that before this Conference adjourns I would be glad if one of my teachers, Mr. Wing (who uses an ear trumpet, and who has now received a shipment from New York city of special instruments for the use of the partially deaf), would show you something that he has already learned by his experience and his observation in reference to improving the condition of the sense of hearing in quite a proportion of the pupils of this Institution. It is, I think, something in a line that we have not heretofore been acquainted with and that we ought, as superintendents and professional men, to give some little attention to.

Mr. Hammond—Mr. President, in the Arkansas Deaf and Dumb Institute there was one pupil who took a course and left the institution; I believe that he was supposed to be congenitally deaf. He went from there to the Hot Springs—I don't know as he went there with the purpose of trying the water on his ears—but, at any rate, he took the baths while there, and his hearing was restored to him. He then, of course, had to begin to learn the English language somewhat as an infant would. At the time I knew him he had been away from the institution perhaps six or seven years, possibly not quite so long as that, and he did not have the full command of the English language at that time. That might partly be attributed to the fact that his parents were German and spoke German at home, and partly to the fact that he was congenitally deaf. I believe that that was his case, that He was congenitally deaf.

I met one other person who said that his hearing was restored —his name was Davis—he was a photographer in Indianapolis, and I believe had been at one time in the institution. Dr. McIntire can tell whether he was congenitally deaf or not. He said he regained his hearing during a cannonading.

DR. MCINTIRE—I would like to ask if the boy's hearing was completely restored.

MR. HAMMOND—Yes, at the time I knew him he could hear as well as any one. My remembrance is that he was a congenital mute. Whether he was totally deaf it never was tried, but he went through the institution as a deaf-mute; that he was too deaf to be treated in any way.

DR. E. M. GALLAUDET—I think, perhaps, Mr. Covell will recollect a case in Virginia. The boy said to me that he went to school at Staunton some years ago, at the age of fourteen, as a deaf pupil, but he now hears and speaks and retains a knowledge of the sign language. I see him quite often, but have never had a chance to catechise him very much as to what he has passed through; that is his story. He could hear and speak in his early life, but lost his hearing and then went to the institution, and now he is a hearing and speaking man and can hear as well as anybody.

MR. COVELL—It seems that he was there, but I had never heard of the case as presented by Dr. Gallaudet; I had never heard of his restoration.

DR. MACINTIRE—In respect to the case in Indiana,—he was not born deaf, but became deaf from sickness in early life, and had rather a poor physical development. As he grew in age he entered the school, but was not deaf then. As his health improved his hearing improved, so that when he left he could hear well. There was another thing in connection with that case which I will mention. Before he entered school his power of distinguishing sounds became very deficient, but as his attention was cultivated and the operations of his own mind developed, his hearing improved. I think, in teaching the deaf to hear, as far as my observation goes, that is the main thing—to get them to pay attention; thereby they gain a facility in understanding others and thus it is called improving their hearing, whereas it is simply and principally the improvement of their attention.

MR. GREENBERGER—Mr. President, as the remarks of Mr. Hammond would seem to be a very good advertisement for the Hot Springs of Arkansas, I would like to inquire whether he owns any stock in those springs.

MR. HAMMOND—No; I wish I did.

Mr. Greenberger — The reader of the paper to which we have just listened, has mentioned a certain locality in the United States from which the largest proportion of deaf mutes in the world has come. I believe it is in the island of Nantucket, as far as I can remember. They say that island was settled by about twenty families and that they have intermarried so that now they have a population of about two thousand, and there is a larger proportion of deaf-mutes there than anywhere else in the world. I think some of our New England friends might be able to give us some information on that subject. Perhaps Mr. Williams; I would like to hear.

Mr. Williams — I can give you no very definite information in regard to it. I was down to Martha's Vineyard last summer, down at Chilmark, at the end of the island, where most of the deaf-mutes are. I went out and spent a Sunday there and talked with them, and I found at that end of the island about ten or a dozen deaf,mutes, and that was all that lived in that part of the island at the time. There are a few others scattered over the island,— I think, perhaps on the whole island there may be twenty or twenty-five mutes; not over that, I think.

Dr. Gillett — What is the population of the island?

Mr. Williams — That I cannot tell you. It is an island about twelve miles long, and is settled by a sparse population. Cottage City, in the summer, of course, has a very large population, but the ordinary population of Cottage City during the year is, I think, about five hundred; and I should think perhaps of the whole island, it might be two or three thousand.

Mr. Greenberger — It was Nantucket Island that I heard spoken of in regard to this fact.

Mr. Williams — Well, think there are a few mutes in Nantucket, but I know that last year, before I went down there, I ran over the record of those who had been in an asylum with the idea of hunting them up, and I think there had been, in all, from Martha's Vineyard, about twenty-five or twenty-seven, as nearly as I remember, and in Nantucket, not over twelve, I think; I think not as many as that; I don't remember the exact number, but I know that there were a good many more from Martha's Vineyard than from Nantucket.

Dr. E. M. Gallaudet — I move that we pass on to the next subject.

Dr. Gillett — I understand, Mr. Chairman, that Prof. Bell is on his way to the Convention. I was in hopes that he might get here before this subject was disposed of and give us his ideas on a deaf variety of the human race.

DR. E. M. GALLAUDET — I would say that statistics concerning the deaf and dumb are in his hands and I think it highly probable that he will be able to present us some views on that subject; I presume he will be here to-night.

PROF. NOYES — Mr. Chairman, I will be happy to introduce to the convention the Rev. Mr. Dunne, of Buffalo, New York, and the Rev. Father Hines, of the same place, ex-president of the board of trustees, and move that they be elected to the position of honorary members of this conference.

THE PRESIDENT — Those names will gladly be entered up on the records of the convention as honorary members. We are glad to meet them.

PROF. NOYES — Mr. Chairman, I think it would be very agreeable to the conference to hear just a few words from the Rev. Mr. Dunne concerning the work in Buffalo.

REV. MR. DUNNE — Mr. Chairman, and ladies and gentlemen of the conference: I am rather taken by surprise to be called upon to speak to such a gathering after traveling a long ways, and I may say not a very agreeable journey having met with many disappointments on the way. We hoped to be present at the opening of the meeting but were detained at several points. Hence, for want of sleep and other inconvenience, to attempt to give you any reasonable and at the same time just knowledge of the work being done in Buffalo would be expecting too much of me. I can simply state, however, that the cause of the deaf-mute is being quite well attended to in Buffalo. Of course, ours is the only institution right there, but we have other most worthy institutions quite near by, and I think very few, if any deaf-mutes in Buffalo are found not to have availed themselves of the great privileges which our State affords. Of course I suppose most of the pupils of Buffalo City attend our institution. We have, however, very few non-Catholics; as you are well aware, ours is a Catholic institution — in this sense, that it is presided over by Catholic teachers; this brings all Catholic children of that vicinity within our institution — in most all cases. We have, however, a few non-Catholic children and endeavor as much as possible to afford them the same opportunities as our own. We look upon ourselves as mere agents of the public — we are their guardians and custodians of the State funds, and we do the best we can to further the cause of those who are under our charge; we believe that to be a duty incumbent upon us, hence, as far as lies in our power, we lay aside all feeling of our special work, and try to make our labor extend to the general good. Now, we have in our institution at present about 160 pupils. We have them from seven years up. We have some girls, and if I must say so I have always felt that the young ladies attain greater proficiency than the young men in our studies—in our mental studies. As regards the industrial part of our institution, our boys, we must say, make a greater success of it. We teach and give a pretty good idea of type-setting, of cane-chair seating, of shoemaking and tailoring, and of plain and fancy dressmaking for the young ladies, and also teach them the best way of doing ordinary house hold duties.

We feel very grateful, and it makes our labor quite satisfactory, to find that it meets with such a generous response on the part of our charges. I may say that if there is anything we pride ourselves upon, it is the love and affection of our children for our teachers, and after they leave the institution walls they never fail to remember the kindnesses they have received; and I am sure it is the same with yourselves. This is a great recompense for the years of labor that you spend in their behalf.

Our institution is not just what we wish it to be. Our material structure might well be advanced. Our numbers have been increasing for the past years, and really our present accommodations are not what they should be. We hope, however, to have this defect very soon remedied. We have a very beautiful place in the outskirts of the city (at present we are right in the center of the city), and we hope soon to have ample accommodation for all our children. We intend this fall, at the opening of the next term, to send the small ones of our body to this place in the country. We call it in the country because it is removed from the wear and tear and buzz and excitement of the city. We intend, of course, to send only the youngest, at present, because the buildings there will not accommodate above fifty I think; however, take fifty from one hundred and sixty and you can readily see that our accommodations in our old place will then be ample. Sooner or later we trust we may have all our children removed outside of this hum and business of the city. Although we are in about as quiet a block as we could hope to obtain in our part of the city, still we must feel there is always a great deal of distraction there; there is always such a tendency, to the boys especially, to run out upon the street, and certainly we try to impress upon them that we are not to be considered as jailers—we want to impress upon them there that they are in an educational institution and not in a protectory or an asylum of refuge; hence, our means and mode of discipline, so far as we are able, is one of the mildest, and we feel we can accomplish far more by mild means than by others. It is true that at times we are called upon to exercise and wield physical suasion—this must be expected among a crowd of boys—however very rarely are we called upon to do so. As I remarked before, the affection of our children is so great for their teachers that one word from them and, in fact, a cross look is enough to correct them.

It is gratifying to us to know that our neighboring institutions are thriving so well. Of course we keep ourselves posted, as you do, upon our neighbors' work, and it is no little gratification to us to see the cause of the deaf-mute being looked after so thoroughly throughout the country. Only a short time ago, in one of our cities, I was told that a great moving was taking place to further the interest of this cause. I am sure whatever words I am able to speak to lend some encouragement to the cause I shall be happy to give, for I know that no one outside of teachers and no one who is not within reach of them, concerning this class of children, is able to appreciate their needs, and I know that no one understands the infirmities of the child better than the teacher. I know that I could understand them far better if I were a teacher. I am not, in the strict sense of the word, a teacher, but in my capacity simply the chaplain of the institution. Of course I am called upon to give instructions on Sundays, and at times, I must go and encourage the children and visit them, visit the school room and listen to their examinations and encourage them by kind words. And certainly, as you well know yourselves, the visits of any superior in the institution, though rare, are at all times most agreeable and encouraging to the children.

Now, I wish I could say more; had I come intending to speak at any length, I might not have bored you, perhaps, with such very crude talk,—for you are not used to such. You come here prepared, and you know what you are to say, and your experience with this class of persons is so much better than mine that any words I might say would simply possibly awaken a thought in your mind and not at all give you any knowledge. So trusting now that our good cause may prosper, and expressing the gratification I feel to be present here the first time in such a body, I trust it will not be the last. I shall always endeavor to be present at such gatherings while I live, for while I live I cannot help but feel an interest in these poor outcasts of society.

The Rev. Father Hines was called upon to address the Conference but begged to be excused.

THE PRESIDENT — The next topic before the Conference is industrial work and the best trades to be taught. The committee don't seem to have arranged their team.

DR. E. M. GALLAUDET — Mr. President, the committee expect the whole Conference to be "the team" on that subject.

DR. PEET — Call on Dr. MacIntire.

THE PRESIDENT — Dr. MacIntire is called for. Doctor, don't leave out cooperage. They don't any of them say anything about that, and we couldn't get along without barrels up here in this country.

DR. MACINTIRE — Mr. President, I am not one of the talking kind and I have not prepared anything upon this subject. I feel the importance of it — I know the importance of this branch of instruction; I think it has been demonstrated in all the older institutions that it is one of the instrumentalities next to that of intellectual and moral culture in the preparation of the pupil for the business of life.

In the institutions with which I have been connected, the trades, or occupations, that have been carried on that have met with most favor and seemed to me to be the most useful are, first, shoe making and cabinet making, (including carpentering) and printing, for boys; for girls, all the variety of needle-work — making of dresses — and the simpler and the easier parts of the household work. The great question with any superintendent in respect to this is to divide the time properly between intellectual and moral culture and mere industrial training. I find that in my experience and observation I have found it to be a means of intellectual culture; and, without detaining the Conference with numerous particulars, I will give one instance in which I had a class of boys — four or five of them were very dull — about twelve years of age. They had been to school one or two years, seemed to have no attention. I put them into the chair factory and allowed them a percentage upon the work they would do. I had sixty of those little boys in that shop caning chairs. These boys that were very dull in school, I noticed soon after they got in there, brightened up and seemed to take more interest in school. Now, as a fact, you cannot get uncultivated children, children of ten years of age, that have never been to school, never received any education at home, to apply their attention to their lessons very long at a time, and the two hours and a half in the forenoon and the two hours and a half in the afternoon became a drudge to them and you could hardly interest them; fixing their minds on their studies was impossible, for so long a time; but relieving them by having this variety of work for a couple of hours I found that their attention was cultivated very rapidly, the boys seemed to feel that they were doing something useful and they seemed to grow an inch or two in the course of a few weeks. And I carried on that shop till I left there, and I found it one of the very best of things, much better than rough playing. They had plenty of time for exercising besides this, but they were not old enough to be put at any other larger work.

Well, I found this a means of training the girls: we had a room fitted up, and a teacher, where they would go and spend an hour or two simply at sewing. The very fact of hemming or stitching or knitting, or anything of that kind, fixed their minds upon it longer than you could get them, uncultivated as they were, to fix their attention in the school room. And I have found that those boys that were the most faithful at their work in the shops, improved faster than those that ran about and spent all of their time, out of the school room, in doing nothing. I know this to be the fact in hundreds of instances, and I believe that as an instrument of education, aside from the mere skill in mechanics, this work of a short time each day during the week, is a means of intellectual culture and of good order and of self-reliance and obedience. They take an interest in something that they are doing, and it seizes upon them at once. They make a thing, and they see that there is some merit in it. I got circular saws—these little saws—three or four of them, and set them to sawing up and making brackets and everything of that kind, and got them a lathe and set them to turning. They would turn out all sorts of things and interested themselves in that, and it did not interfere at all with the school, spending two hours a day at that, but it was rather an aid. It deepened the conviction in my mind, that instead of being a detraction, it was an aid to the school, to say nothing about the habits of industry that they acquired, and that is a very important thing. You take any boy and let him grow up in idleness and never learn to do anything with his hands, I don't care how much you instruct him, or how much care you devote on him, until he is eighteen or twenty, if he has to work for a living afterwards, he is a very lazy man, and you can hardly get him to do anything. But, if you commence thus early and cultivate the habit of industry, this difficulty will be avoided. Now, we all have to work—very few of us escape from it—the vast majority of men; and I may refer to a fact in my own history. I was sent to school when I was about fifteen; I wanted to go to college. My father said that I must learn to work first, and he put me into a shop; I worked three years there, every day, steady, and then I went to college. Now, in looking back over that experience those three years of steady work were to me, as to the success of life (if I have ever attained any) and as to the business of life, and as to my own happiness, as good a part of my schooling as I ever had.

THE PRESIDENT—Well, Doctor, how about the physical development of the condition of these children while they are doing that work?

DR. MACINTIRE—Oh, yes—that escaped my mind. This regular employment of the children for a short time each day was very beneficial. They would go into supper and they would eat heartily. If they went out playing and exercised violently they would become over-heated and probably be injured by their violent play; but this work in the shop for a short time each day occupied their attention and helped them. We had a large cabinet shop, and as soon as they got old enough, we had thirty boys working in there; and they made all kinds of furniture, of the very best kind, and we did not think a boy was able to graduate in the latter department, if he worked in that shop, unless he could make the best kind of a bureau, or clothes-press, or dress the finest piece of furniture. In this shop there is now of course considerable machinery, and at cabinet making in the old way no man can earn his salt, in these days; it is not like it was a good many years ago, hence the pupils must be taught the use of the simpler part of the machinery in these shops; and if I were going to establish a cabinet shop (as I hope to do within a year in the new institution with which I am now connected), I would introduce the lathe and the cabinet machine and friezer and all these machines they use in making ordinary cabinet work and furniture. They must learn the use of the tools when they go out. Now, the boys that went out from the institution in Indiana (I know of a number of them that are working in different factories) went right into the establishment and took their place, and one that I have in mind now makes as big wages as any one working in the shop, and he has worked there for four or five years. He sees sometimes to the care of the machine and sometimes he puts the work together, and he is a good workman. He learned it all in the institution during his course of study. And six of the boys that went out of the shoe-shop, that graduated, went into a factory where they make shoes by machinery. I went over there three months afterwards—I went frequently—but I went on purpose to find out from the foreman of that shop how they succeeded. They had been in there only four months and they had learned to make shoes by hand with very little machinery. He told me that those six men were the best men that he had in the factory, and I don't know but some of them are working there yet.

THE PRESIDENT—I would like to ask if the fact that boots and shoes are made by machinery very largely now does not interfere with this work in these institutions?

DR. MACINTIRE—It does to some extent, but there will always be shoes made, and then, as they do in some of these institutions, for instance in Philadelphia, they have introduced some of this machinery, and so they do in the House of Refuge, where they have 700 boys, and they make a large amount of work and their own clothing and shoes. They have used some machinery, and there is no objection to introducing this machinery into the shops. It is as necessary as the books are in the schoolroom.

DR. PEET—Will you allow me to inquire if your graduates go into these shoe factories and are furnished?

DR. MACINTIRE—Certainly they do; numbers of them have. And these boys now, that work in this shop simply at caning, when they get to be fifteen or sixteen years of age are then transferred to one or the other of the shops.

MR. SIMPSON (Of Dakota) asks Dr. Macintire this question: Who should decide what trade a boy should learn?

DR. MACINTIRE—Mr. Simpson asks, Who shall decide what trade a boy should learn? Well, in the first place, I should consider the question of what the probability of that boy's life is, what his home is, where he will go when he goes home; and then I would consider his talents and taste and preferences. Consult those matters, as far as can be done, in the institution. But I have an idea in reference to this that is higher in the estimation—

THE PRESIDENT—(Interrupting.) He wants to know who is going to decide what trade he should learn; whether it is the parent, the superintendent or who is the deciding power.

DR. MACINTIRE—Well, I say I would consult the parents and the child, and what his prospects in life would be afterwards, and whether he were going back home to work at that trade. But I don't think that is so important as some other things. Now, I have in my mind a pupil that was educated—one of the early pupils in the Philadelphia Institution—he learned boot and shoe making; he learned the trade very well. He has, for the last four or five years, been a foreman in one department of the great Thompson Iron Works, near Pittsburg, and has thirteen men under him that he manages. He is totally deaf, has eight children deaf and his wife is deaf, and you can't find a better family in all Alleghany county. Now, here is the fact that was brought out: The mill shut down, and it has been shut down for some months. He has a little property there, and is supporting and educating his family well. There is not a nicer family of eight children in any place than this. I was going down on the cars a short time ago, and he was with me. He was telling me that the mill had shut down. "Well," said I, "what do you do?" "Why," said he, "I learned a trade, that of shoemaking, and I make boots and shoes there at home at night, and I can get plenty of work to do, and I have done so for years, and when the mill shuts down I go to work and make boots and shoes." Now, if he had never made a boot or shoe, he would not have had the order and determination and the self-respect of work; he would never have gone to the rolling-mill and succeeded there, but, succeeding there, why he could return to this at any time it became necessary. And he has raised a family of eight children; the oldest graduated a year or two ago, and he has five in the Institution now, and they are very smart children, all of them, and learn remarkably fast.

All this shows the point that I want to get at. A great many that I have in my mind that have learned these trades in the institution, have not followed them, but they have acquired the habit of application—they have got the industry, and determination and self-reliance, so that they change as the necessity, arises, into other occupations. There is a case that occurs to me that Mr. Mann will recollect—he is a schoolmate of his, for he was in the institution with the Rev. Mr. Mann; he worked in a shop there, and afterwards went out and took up mechanical dentistry. He is now a full partner in a large establishment in Detroit. I saw him there not a great while ago. He has made money. Well, of course, his working in a cabinet shop didn't help him very much, but he had a taste, and he turned from that, and the habits of industry he had acquired there gave him his success in this branch of industry, and in most cases it will. If you train a boy in his younger years to some certain occupation, although he may not follow it, it prepares him for adopting something else, if it becomes necessary.

THE PRESIDENT — But you have not answered that question. Who is it that is to decide what trade he learns — the superintendent, or the trustees or the governor?

DR. MACINTIRE — I wouldn't have any of them. I would have that arranged in accordance with the tastes of the boy and the ideas of the teacher. He may study his disposition and put him at the employment ——

THE PRESIDENT — Who must?

DR. MACINTIRE — Why, the teacher — the superintendent — the officers of the institution, after consultation with the parents. A man came to our institution not long ago, and said: "I want my boy to learn the shoemaking business." Well, now, the boy has no taste for it — he don't like it. Well, I told the boy so.

THE PRESIDENT — Well, don't you think the parent has the right to select that trade, if there is such a trade in the institution, notwithstanding his preference?

DR. MACINTIRE — They haven't the right without consultation with the officers of the institution, because all of them might want to become printers; they might all of them want their boys to become printers, but they don't know; you see they are not developed enough to know. You must consult them, but then you must also consult the pupil's taste and desire about that. If he has a dislike to that trade, why, I would not put him at it. The final decision should rest with the principal, of course.

MR. SWILER — Mr. President, before Dr. MacIntire sits down I was in hopes he would inform us with reference to one or two more practical questions connected with the subject, and first, as to what may be considered a proper age or a proper time, in the course of the boy's history in the school, for him to be placed in a shop and to begin to learn a trade, and also how long each day, or what proportion of each day, may be thought best to keep boys of the age of thirteen, fourteen, fifteen or sixteen, engaged at work in the shop.

DR. MACINTIRE — Well, boys in these Western institutions most generally enter school at about ten years of age; and they are allowed to remain in school from seven to ten years. I would not put a boy in the cabinet shop until he was thirteen or fourteen years of age. Fourteen is the limiting age in Germany and some other countries, and I think it is about the time when they can be put in, but I would still have some simple employment for these little boys—light employment. I would not keep them at it so as to make it slavish to them, but I would not have it as an alternate thing from that of study and play. I think in some of the institutions, especially the one I am in, there is too much play, there is not study enough, perhaps, but the want or lack of shops is the greatest want of the institution.

Mr. Crouter—Mr. President, in Philadelphia at present we have but two trades, shoemaking and tailoring. The board are very desirous of introducing one or two other trades this fall. They are at a loss, however, to decide what trade or what occupation would be best to introduce; and I would like very much to hear from those who have had charge of institutions where great attention is paid to this matter as to what trades they do consider as being best to be taught these children. We have shoemaking and tailoring, which will be carried on. Now, what other trade comes next? Is it printing, or cabinet making, or what?

Another question which I would like to ask, and that is, in regard to the time that is given during the day to the boys in which they may receive instruction in this work, and whether or not it conflicts with the time that should properly be given to the school-room work. Of course, first of all, is to be regarded the importance of school-room work; if shop work interferes with that, we shall let it alone, we must have time for school-room work.

In some of the institutions there is a system of rotation—which I have never been able to understand—by which boys are a certain number of times in the shops and then in school and *vice versa*; I would like to hear, from those who have charge of institutions where such a system is pursued, whether they find that to be advantageous or not, or whether it is better for the pupils to be at school the full length of time, four and one-half or five hours during the day, and to devote the remaining portion of the time to shop work.

The President—I would like to ask a few questions before we start in, so as to have the speakers answer them also, in relation to the kinds of trade. It strikes me it depends on the locality; for instance, I want to tell you that hearing and speaking people don't go into the shoemaking business in this country. It don't amount to much—they could do better raising wheat. Our shops cobble a little now and then and make a few boots—a very few. Shoemaking, in this State, is not a good trade—it isn't carried on—whereas, cooperage is in great demand; flour barrels are in demand all the time. You take Minneapolis, that sends out 20,000 barrels of flour a day, and Faribault and other places, several thousand barrels—somebody must make these barrels every day to put up that flour at night. So you can see that it depends upon the locality.

DR. McINTIRE—Who repair the boots and shoes out here?

THE PRESIDENT—Oh, we have trained cobblers here, of course, but if a boy expected to settle in Dakota or Minnesota I don't believe that I should select the trade of shoemaking for him to get a living at. All our old shoemakers when they get here drop their wax and go at something else. I simply suggest these things—whether that question of the trade a man is to select is not governed largely by the locality. For instance, if a boy was going to settle on the tip end of Cape Cod, I would say to him, "Learn to fish," or something like that.

A MEMBER—You would put him on the soil out here, wouldn't you?

THE PRESIDENT—There ain't any there.

MEMBER—No, here.

THE PRESIDENT—Oh, yes.

MR. CROUTER—I should think Minnesota would be a good place for a few good shoemakers.

THE PRESIDENT—I think that some of our institutions might teach farming in a practical way. Now, I will just give an illustration of a man who had a very good training. He went through some institution, I don't know where, but he came out here and went to farming; I had a 320 acre farm down on this railroad by a nice thriving village that I had sold to two or three speaking and hearing men, who said they knew all about farming and they couldn't make the payments and I had to take the farm back, and I finally traded with this man and he has made every payment (he is as deaf as a rock and can't talk with anybody), and he has got an $8,000 farm there that looks like a garden.

PROF. NOYES—He is the man that was "killed by bushwhackers out in Kansas."

THE PRESIDENT—Yes, he has been killed several times besides.

Prof. Noyes—I want to say to the chairman that since I came into this room I have received a letter from one of the graduates of our shoe-shop, and while I like to agree with Mr. Mott, and most always do—

President Mott—You ain't obliged to.

Prof. Noyes—I wish to say that the shoe business has been more beneficial here than some of the gentlemen might infer. I will tell you just how it works. Mr. Mott is right when he says in summer time they want men to make barrels and cut wheat, but we have a long winter here when men don't get much work outside to do, but a boy who has learned his trade, that of a cobbler or the boot and shoe trade, there are three or four or five months in the winter time that he can turn aside from his ordinary avocation, and make a good living at it. So with this boy. He comes from Douglas County; he can't write a very good letter—he is a poor Norwegian boy that never had a very bright intellect—but he is a tip-top boot and shoe maker. He makes my boots—did when he was here—and I don't ask for any better boots than he can make, and they will stay till the last thread gives out when he makes them. Now, he finds the shoe business a great help to him, and I could give you similar instances.

In regard to learning a trade here,—several of our boys work in a shoe factory in St. Paul. If they have learned the hand-work pegging and sewing and matching and trimming they go right into a factory, and in a few months they are first-class men to work at the machine, and I can give you the names of men that are making a good living there. So that our boot and shoe shop, while we don't turn out a great many goods, I may say that all our work is turned out so that we have nothing on our hand to be held as waste material, and the trade is useful. Yet there are some drawbacks to it; as a steady, annual employment, one that gives remuneration, in only a few cases is it successful, but as an alternative, as in the case of the Pittsburgh boy that learned a trade, and when he could not work at the forge or in the foundry, shoemaking was just what he needed to help him through the year. So with some of our coopers, they will work a part of the time at the cooper business and then at the boot and shoe trade, if necessary. The value of it has been practically illustrated here time and time again, and I am convinced, too, that the industrial work is a help to intellectual work.

Some would say why don't you give the boys all their time for play and exercise? It is a loss; but give them systematic, regular training in some industrial work for two and one-half or three hours a day, and is gives them discipline, gets them into habits of industry that are invaluable.

I want to give one illustration among my teachers. Mr. Wing was educated partly at the American Asylum at Hartford. His father was a gentleman of competence, lived in Bangor, Maine, and when he brought his son to Mr. Turner (who was then the honored principal of the institution at Hartford), he said: "Oh, don't ask my boy to work in the shop; please excuse him; it will not be necessary for him to make chairs and benches and bureaus." But Mr. Turner said to him: "This is the rule of the institution, all boys must learn a trade." Well, Mr. Wing went in and learned to make furniture and he can do good, nice work. Sometimes, as we all know, fortunes don't last as long as we live, and I have heard Mr. Wing say time and time again since he has been here, "I wouldn't give up what I learned in that cabinet shop and the discipline and habit of industry for thousands of dollars." He finds it invaluable to him now in his vacation. I met him at his door the other day with his coat off; he had just made a nice screen for his window and the joints were dovetailed as nicely and accurately as a first-class cabinetmaker could have done the work at his shop; and he took real enjoyment in the work, and said he, "I would rather lose a thousand dollars than to lose the knowledge and the discipline I received in that shop in the American Asylum at Hartford.

DR. GILLETT—Mr. Chairman, there are two departments of education that are now attracting the attention of thoughtful educators for hearing and speaking youth, I think, more than any other departments; one is the kindergarten, a system of education for very little children, and the other is the manual training school for young men and young women, and those who are approaching the early years of manhood and of womanhood. One of the most eminent successes in this country in the department of education is the Manual Training School in the city of St. Louis. It is being imitated in the city of Chicago, and ultimately schools of a similar character, for manual training, will be instituted in all our large cities, and I presume they will spread to almost all our towns and villages; and I think it is one of the hopeful signs of the present time, that we are coming to recognize the fact that the physical nature of a man is to be good for something.

Now, the ancient Jews had an adage, "He that fails to teach his child a trade teaches him to steal." That has an element of truth in it that applies to all classes of youth, but especially does that element of truth apply to the deaf. They will not become lawyers, they will not become physicians.

A MEMBER—Sometimes lawyers.

ANOTHER MEMBER—We have two.

DR. GILLETT—They are exceptional cases; we don't deduce a general rule from exceptions, but we will lay it down as a rule that these persons are not going to become lawyers, they are not going to become physicians, they are not going to become clergymen. Some of them, now and then, as we have had developed this morning, may aspire to become artists, but the subject we discussed this morning, of art education for the deaf, and manual education for the deaf, are two subjects that are very intimately related, and they are so intimately related that it is hard to tell where the proper sphere of the one ends and the other begins; and all the art education that you will give to your pupils will be found showing its influence and its power and its usefulness in all their after life. You take one of the young girls taking her lessons in drawing and cultivating her judgment and sense of propriety as to proportion, and in the course of her studies, especially if she goes into the department of clay modeling, she is bound to know something of the anatomy of the human frame—not in a scientific sense, necessarily, but the proportions of the various parts of it, and she cannot become the executor of a passably successful crayon portrait without unconsciously studying something of the proportions of the various parts of the human frame. Now, the girl that spends an hour or two every day in the art department, will make a more handsome dress, she will trim her bonnet or hat with more taste, and she will find the usefulness of it in all her after life; and the boy that has been studying his art lessons and cultivating his ideas and his appreciation of proportion will make a better shoe and a better cobbler.

Now, some one speaks about cobblers, seemingly with some sense of contempt. I have respect for cobblers; I like to have a neat patch on my boot, and I like to have a boot patched so nicely and neatly that I won't be ashamed to wear it after it is patched; and the young man who performs the process well, is the one who is going to be successful in life.

Changes are continually coming over the face of society with reference to all these practical things. What is the reason, Mr. Chairman (and I appeal to you for the truth of it), what is the reason that we find so few native American youth who are learning trades? They have been given over to the foreigner almost altogether, and our young men have come to think that they must be "clodhoppers" if they learn a trade, and that they must measure off tape, and that it is only the sphere of an American young man perhaps to stand behind a bank counter; and the men that are making things, and that are producing things, and that are being found of real practical value in the community, are very largely foreigners and the sons of foreigners. And it is in the recognition of this fact that is inducing our advanced thinkers to commence to establish exactly (if not exactly, almost exactly), in their educational processes for the youth of the country at large the systems that they have been practicing for almost half a century. You go back to the lives of the venerable Dr. Peet (father of the Dr. Peet here), and the Rev. Mr. Gallaudet, and you will find, sir, that they were laying out, for the young men and young women who are coming, as children into these institutions for the deaf and dumb, almost precisely the same that is resting in the minds of the public at large now as the ideal of the most powerful and the most proper and fitting education for the youth of the country at large. I mean first, for the little fellows, the Froebel system; in the more advanced periods of education, we have this manual training, that is making these young men and these young women of some practical use. Now, I want to hold up here this afternoon, high, (and I know you will sustain me in it, Mr. Chairman,) the idea that a manual training school is as dignified a school as Yale College or Harvard University, or any theological school in the land. And they don't do so much hazing.

I tell you these are practical questions, from practical men, for the mass of men at large, and I thank God that this profession has been teaching the whole community a lesson that it is profiting by, and the time is coming when these venerable men, of whom I have already spoken, will be recognized and acknowledged as the leaders in this great educational reform.

Now, what are the best trades proper to be taught? If there was one trade that all deaf-mutes were fitted to learn, that is the trade that ought to be introduced into the institutions. Then it will be still more desirable if that trade was exactly suited to all localities, so that the produce of the mechanical department might be disposed of, as has been intimated by our President very forcibly this afternoon. Then it is also the case that this produce should be so disposed of as not to bring an institution into competition with private enterprises. But, Mr. Chairman, the existence of all these circumstances concurrently, while they may be imagined yet we know perfectly well that they never can be realized as a matter of fact. There is the same diversity of taste, there is the same diversity of adaptability to particular trades among deaf children that you will find among children who hear and speak in society at large. One young man that would make a very good shoe could not make that table to save him from the grave; another one could make a very respectable table but he could not set up a good, tasty work of job printing, it is not in conformity with his tastes and with his preferences; and the one who will make an excellent job printer could not cook a meal that you would sit down to and eat a month successively perhaps without being carried to your grave.

Now, one of the highest arts is in the style of cooking. We had that question discussed at the Conventian two years ago. I find that for some, shoemaking is a good trade, for others printing is a good trade, and for others cabinetmaking is a good trade, and for others farming is a good trade. Now and then you will find a lad perhaps who has a predilection and a taste for the care of stock, but a good cow is too valuable to be practiced on by a novice; I don't like to trust my boy with a five or six hundred dollar cow to look after, consequently, in the care of stock and horses I am very careful about sending novices to look after them, as I did years ago. Then I find some who make excellent bakers. Baking is a good trade, and a good active young man whose taste runs in that way will make forty dollars a month right straight along at baking. It is just as honorable a trade as any. Some others in vegetable cooking or the cooking of meats will be successful, and that will make a very excellent pursuit and they will pursue it to advantage in their after life.

Now, it is impossible to say that any one trade is better than another for a particular locality, except under certain conditions, but you cannot say that any one trade is better or not so good as certain others for the deaf or dumb. We must make selections and suit that according to the circumstances of the individual cases.

THE PRESIDENT — How do you find the mutes take to gardening?

DR. GILLETT — Some take to it very well.

THE PRESIDENT — Your gardener down there told me that you always picked out those that were smart for something else, and always left the poor ones, that didn't know anything, to him.

Dr. Gillett — If you had gone to the shoemaker, you would find that he always wanted the best workmen to work for him. A smart boy will naturally gravitate to a printing office. No trade will hurt anybody; I require every pupil, so far as I can, to learn a trade; I would have him learn a trade if I knew he would never use it after he went out. And I do not find the difficulty with parents in regard to their children learning trades and working about the institution that was intimated by Mr. Noyes. I find that men who have made their fortunes themselves, and know what it is to make a fortune (in this country it comes to be that we haven't many very rich men except those that have made their wealth by hard work), they want their boys to learn some trade, and I have had parents come to me and want to know if there wasn't some way in which they could get their hearing and speaking children into the institution so they could be made to work; they won't work at home; these persons are very glad to have their children learn to work. But I tell you I have had some very different cases — where they never had a real good, honest, nice square meal and a dessert to follow it — I have had them come and say, "I don't want my boy made to work; he is a poor deaf and dumb boy, and he is going to have a hard enough time anyhow, and I am poor and I have had a hard time, and I have brought him to a State institution now and I don't want him to work." This is the class of people generally that object to their children learning a trade. It is the people that are of no account themselves, that have never made anything and that nobody ever expects will make anything — they are the persons that mostly object to their children being taught to work. A man that has worked and has amounted to something has an idea of the dignity of labor. I hope we will all go home impressed with the idea that manual labor is just as important to be taught in the institutions as anything else.

Mr. Williams — In our institution we have three trades, tailoring, shoemaking and cabinet making. In the tailor shop we put the small boys before they are large enough to go into one of the other shops — large enough to work at the bench in the cabinet shop, but we don't expect them to learn the trade as a trade, but they are put there more to learn habits of industry than anything else, and then after that they are put either into the shoe shop or the cabinet shop. Throughout New England so much machinery is used in the making of shoes that we do not find that is the most profitable trade to put our boys to, though, if they learn to use the tools that are used in a shoe shop, we find that those who work in that every day, generally find work in shoe shops if they choose to go to work in that direction, and they very readily pick up the method of working by machinery. But we find a cabinet shop the most useful shop that we have. They don't learn thoroughly the cabinetmaking trade, but they learn to use tools that are used in wood-work, and the variety of wood-work is very great. When our boys go out they find very little difficulty in getting work on wood-work of some kind. They go into furniture establishments, some of them, they go into piano shops and help make the boxes, I mean the cases of the pianos; they go into wagon shops, they go into carpenter shops, they go into cabinet shops,—any sort of occupation where wood-work is used and the same sort of tools they have used in the shops they readily pick up, and we find that in that way the the cabinet shop proves the most useful shop we have.

DR. E. M. GALLAUDET—Mr. President, I hate to prolong this discussion for I think perhaps we have spent about as much time as the committee had intended. Time enough remains for the discussion of the second subject that has been suggested, but I have noticed, Mr. President, that the talking has all been done by the gentlemen. Now, I have, during the discussion, had several suggestions made to me by an eminent lady who is a member of this Conference and whom we all delight to honor. She has asked me to give some of her ideas to the Conference, second-hand; I don't think they deserve to be second-hand, and I want to suggest that the debate on this subject be closed with a five-minute speech from Miss Fuller.

MR. GREENBERGER—Mr. President, I would suggest as an amendment, that Miss Fuller be given unlimited time.

THE PRESIDENT—Miss Fuller will address the Convention.

MISS FULLER—Mr. President, I simply suggested to Dr. Gallaudet that Mr. MacIntyre had failed, perhaps, to say that one element of usefulness in the teaching of trades was that it was a preparation for others; that possibly the boy of whom he spoke as learning—I don't now recall the trade—who afterwards became a dentist, might never have been a dentist if he had not learned the use of tools. And then I spoke of a case in my own school. We had a boy that enjoyed books so much he had given his whole time to books, but an opportunity was afforded him of learning the use of tools, and he was quite successful in a course of study in the School of Mechanical Arts, and though he did not take up any cabinet work or other work connected with wood, yet he is now going on very successfully with a course of training in engraving.

Dr. Gillett spoke in regard to the pioneers in this work, teaching ideas that the public schools are following out. I think this work is really appreciated by the people who are foremost in the work of manual training and also in other directions. A person who is and who has been for many years quite prominent in educational matters, remarked, in speaking of defective classes, that we must go to the schools for defectives to learn how to teach. Then, too, in his remarks in regard to the influence of art upon trades, he did not speak of color and the training which persons who learn painting receive in that direction. I think you are all quite familiar with the lack of knowledge that exists of the harmonies of color, and I think in this way one learns it almost unconsciously.

Another point, too, which he omitted, was the profitableness of this instruction to our pupils, because certainly the high cost of all labor, such as dressmaking, millinery and all the finer work, really consists in the artistic value of that work, as we all know that the tailor who makes the finest suit, the best fitting garment, receives the highest wages, and I think that the only difference consists in the artistic merit of the work. I think that is all I have to say.

Dr. Gillett—Mr. Chairman, I had a revelation on that subject the other day.

The President (interrupting)—You are finishing your speech now, are you?

Dr. Gillett—No, I am now going to make another speech, for a friend that isn't here. A gentleman came into my office and sat down for some time and talked over this matter of industrial education,—"Now," said he, "doctor, I have got an idea; there is something that you have not introduced in this school yet, and I think it would be splendid." (Thinks I, now we are going to have something grand). Said he, "I think that you ought to teach these deaf-mutes stenography; that it would be a fine thing!"

The President—I think that all the speakers who have spoken on this matter, have ignored the fact that we have a number of female deaf-mutes, and that no trades have been suggested for them.

Dr. Gillett — Printing.

Mr. Mathison — But there are some other trades besides printing. I have been up several times, but I didn't catch the eye of the President, and I was forced to sit down. If the members of the Conference will just bear with me two or three minutes, I will offer what I have to say; I don't want to prolong the discussion if it is not agreeable to the members of the Conference.

On motion Mr. Mathison was awarded three minutes in which to conclude his remarks.

Mr. Mathison — I will try and get through in that time.

Mr. President — You will have to.

Mr. Mathison — In our institution we have paid considerable attention to the training of deaf-mutes in the knowledge of some trade. One of the first things that occupied my attention after becoming superintendent (of course at that time I was new and inexperienced in the matter and didn't know much about deaf-mutes and their moods), I looked about and said to myself it is all very well to give them an education, and it is very important that they should have a first-class education, but it is equally important that they should have something to make their bread and butter by. We have in the institution the shoemaking trade, the cabinetmaking trade, gardening, farming and baking. In our shoe-shop we have quite a number of boys who are employed an hour or half an hour before school and two hours after school. I found that some of them did not make that progress which it was desirable they should. You know a considerable number of deaf-mutes soon get an idea in a short time that they are practical shoemakers. I conceived it my duty to see that they were taught just as thoroughly in the shoe shop as in any other class in the institution. We have an instructor who is a first-class man in every respect, and he has taught these boys that before they grow up they must be able to make first-class work before we recommend them. If they go out and say they are not coming back, if they want a certificate, if the foreman cannot recommend them to take a place in the ordinary shops, the boys that go out do not get the certificate. If they are not thorough in their work and are not able to do their work as well as speaking people, we don't want them to go and get places and do work which is not satisfactory, and obtain money out of sympathy; we want to place them in a position where they will be able to demand work, and give good work for the money received. Some of our boys are now carrying on business for themselves.

In the cabinet shop we do not pretend to give them a first-class education in cabinetmaking; we haven't the opportunities, and I don't suppose many of the institutions have, to do so. In this locality you might be able to teach them to make barrels, and all that, and they would get that work to do when the school term was out, but there are a great many things, and this is a pretty fast age, and they have to compete with first-class mechanics. We do not pretend, and we do not want to lead the parents to think, that we are doing anything or attempting to do anything but what we are able to do; we only pretend to give them as good a knowledge of the use of tools as we possibly can.

Now, in farming, as you know, the institution closes in June and commences again in September.

THE PRESIDENT—The time is up.

MR. MATHISON—Well, I have not touched on the girls' side of the question yet. We have quite a number of girls who have been taught tailoring and dressmaking, and we secured for that department, two or three years ago, a first-class instructress. Dr. Gillett was there, and he saw some of the work. We have turned out a considerable amount of work; we made all the clothes for the boys and girls in the institution. We bought one of each kind of all the different kinds of sewing machines used. We also had a knitting machine. The little girls were taught button-holing and sewing. I might go on further in regard to this matter, but what I wanted to lead to was this, that in our institutions our whole aim should be thoroughness. The pupils should be thoroughly taught in the various trades and led to think that they are able to practice those trades so that when they go out they are not to expect they are to excite any sympathy because they are afflicted, but be able to take their places and earn their money just the same as speaking people.

THE PRESIDENT—The topic following the one just discussed reads as follows: "Of what practical value is articulation to the deaf in the prosecution of business?"

DR. E. M. GALLAUDET—Mr. President, in presenting this topic I will say no speakers have been arranged to lead off in this discussion. In presenting this question it is not, of course, to be supposed that it is designed to imply that articulation is of no use. We want information as to how the deaf-mutes that have been taught to speak have succeeded in prosecuting business *because* they had been taught to speak, and then we want to hear something about deaf-mutes who have succeeded in business, perhaps, who had never been taught to speak. We want to know what the practical result is of giving speech to the deaf, in the prosecution of business.

It is a very important factor, it is an element in their education, and we want to know how far it helps them in the practical pursuits of life; how much does the giving of speech to deaf-mutes help them in the gaining of their bread and butter. There are those present who are informed on this subject, and I hope the discussion will be a profitable one.

THE PRESIDENT — Now, the speakers will please remember the point: It is not whether we are to teach articulation, or anything of the sort, but of what practical value is articulation to the deaf in the prosecution of business. I know it is much more satisfactory to you fully to understand the point and then talk to it, than to ramble. Now, gentlemen who are acquainted will please call out anybody they want to hear.

DR. E. M. GALLAUDET — I should be very glad to hear from Mr. Greenberger.

MR. GREENBERGER — I am very sorry, Mr. President, that I was not informed beforehand that this discussion was going to take place, and that I was to be called upon, for I could have thought up the subject a little better.

I have put down a few names of former pupils, and I will try to tell you how they get along. One boy who left the institution two years ago — I don't know whether he was a congenital mute or not, but I know he could not speak when he came to us — and I find that he understands his foreman very well (he is a wood-carver) and he understands all his fellow workmen. I made particular inquiries in the shop where he works, and I learned that he never resorts to writing or the use of signs; he always speaks and they speak to him — and he was one of the poorer specimens that we sent out of that institution.

I will mention the case of another boy.

THE PRESIDENT — Well, I suppose the question is, did he make any better window-frames than he would if he had not been able to talk? I am not a judge of window-frames.

MR. GREENBERGER — I will come to that presently. There is the case of another boy, who is also a wood-carver, in a very large establishment in New York; and I went there sometime ago to inquire how he got along. He stood talking, with the foreman in one corner and the boy in the other corner, in a very large room, and I saw the assistant foreman step up to him and talk to him giving him some directions about his work — the boy did not use any signs, did not use any writing — he understood all that was said to him. By and by one of the other workmen stepped up to him and talked with him without using signs or anything else. In the meantime the dinner hour arrived — twelve o'clock — the noon recess, and he went out and talked with all the other men, and they talked to him. I went to make inquiries and I found that a good many of those men to whom he talked were Italians, Italian artists that had been imported for that work. I asked them whether they could make themselves understood and they said yes, they understood him very well, and he understood them.

Prof. Noyes — Did he talk English to them?

Mr. Greenberger — Yes, he talked English, but they couldn't write. They said they liked to talk to him, and the foreman told me that he would never have undertaken to teach the trade to that boy if he had not been able to talk. He said he had not time to write to him, and he did not know anything about the sign language and he was too old to learn it, and would not undertake to learn it for the sake of one apprentice.

I think of another boy, who left us five years ago and has been in the same establishment, and his history is about the same as that of the others I have mentioned. He talks to everybody and everybody talks to him understandingly.

Also of another case, who was present at our convention in New York, which was recently held; you remember what the President of our institution stated in regard to his daughter. I can corroborate everything he said. She is a congenital mute. She goes out, does her shopping, never resorts to writing, always using her articulation. She goes out into society and enjoys company as much as anybody, and in the summer goes to large summer resorts and becomes acquainted with people as quick as anybody else, and everybody seems to understand her and likes to talk with her. And I could tell of a good many other instances.

Dr. E. M. Gallaudet — I should like, Mr. President, if Mr. Greenberger would give us a little more light on the point to which he briefly alluded a little while ago when he said that this boy that worked at wood-carving — his employer said he could not or would not have employed unless he had been able to speak.

Now, that is directly to the point of the question—how far speech enables a deaf-mute to prosecute his business successfully. Could Mr. Greenberger give any further testimony with reference to that, how far boys or girls of whom he has knowledge have been able to enter into business and prosecute business because of their having speech which they could not have prosecuted if they had not had speech? That is the real point.

MR. GREENBERGER—There is one boy who is just going to leave us now; he is going to be a lithographer. A friend of his father, who knows the boy and has seen what he can do and has often talked to him, is going to take him into his business and teach him the trade. And he, too, stated that he would not have undertaken to do that unless he had known that he could speak to the boy and that the boy could speak to him so that he could understand him. He said that he would not take the trouble of taking a deaf and dumb boy who cannot speak and to whom he has to write or for whom he would have to learn the sign language in order to communicate with him. And I think there are a good many such instances. Now, if a man knows that his friend has a boy and has heard him talk and tried to talk to him himself, it seems quite reasonable that he will be more willing to take him into his shop and teach him a trade than if he could not speak.

In our institution I am free to admit that we have a good many very poor articulators, very poor lip readers (we have as large a proportion of dull scholars as anyone here in his or her school). I have never pretended to make smart men out of stupid boys; if I could do that I would retire from my present business. We have a good many dull pupils, but I do not remember a single instance of parents coming to me and telling me that they could not understand their children. I have found very often, with what we call very poor articulators, the mothers come and say, "There is no child in the institution who speaks as well as my child." But she is used to speaking to her child and not used to speaking to the others. So far as I have learned, they could make themselves understood at home. Very often parents come to me after their children have been two or three years in the institution and talk to them. The child is obliged to ask for everything at the table. We always speak to the child, never resort to writing, and we don't know anything about signs; we insist on the child speaking to us.

DR. E. M. GALLAUDET—Mr. President, I don't want to interrupt Mr. Greenberger, but we have a particular question before us for discussion, and we want to keep to the point. If Mr. Greenberger hasn't anything further upon the point, I hope he will not consider it a discourtesy if I request him to allow somebody else to discuss it.

MR. GREENBERGER—I think that relates to that question.

MR. WILLIAMS—May I ask, Mr. President, Mr. Greenberger what proportion of his pupils, of the boys I mean, go into some trade or some occupation or employment?

MR. GREENBERGER—I try to follow the history of the pupils after they leave school, and at the last account there was only one boy idle, the rest were all at work at some kind of trade.

MR. WILLIAMS—Now, what proportion of those communicate with their employers in regard to their work, in getting their directions, etc., entirely by speech?

MR. GREENBERGER—I think they all do. There may be exceptions, but there must be very few, because I never heard of any.

DR. THOS. GALLAUDET—I can bring on hundreds of cases right along where deaf-mutes that have no knowledge of articulation go right into places and get good situations, get married and support their families, and go on in life as well as the rest of people.

MR. WILLIAMS—That is not the point; the point is not comparing one with the other, but leaving signs out of the question, the question is simply this, can they get along with articulation?

DR. GILLETT—No; how far can they use it?

MR. CROUTER—Mr. President, a recent incident that occurred in Philadelphia in regard to this very topic that is under consideration may prove of interest to the members of the Convention. Mr. Arms (to whom I referred this morning) is a lithographer; he is one of the brightest deaf young men that I am acquainted with; he is one of the best lip readers that I have ever met. He lost his hearing, gradually becoming totally deaf, at the age of ten. He acquired this power to read the lips himslf, through the efforts of his friend. He will enter into conversation with almost any person, whether he be well acquainted with him or not, upon ordinary topics. I just mention these facts to show you how well he can read the lips upon ordinary matters and carry on a conversation. But to the point. A short time ago our board became interested in this matter of supplying our graduates with some sort of certificate or diploma upon leaving the school, and the matter was left to me to secure some estimate upon the cost of procuring certificates. I went to the lithographing establishment of Craig, Biddle & Co., where Mr. Arms is employed; and after some conversation with Mr. Craig upon the subject, he invited me to go up to Mr. Arms' room, which I did, and after some conversation with Mr. Craig he turned to ask Mr. Arms for some information in regard to the probable cost of the certificates; and he immediately began writing, very much to my surprise, because, in this particular case, Mr. Arms is certainly a very fine lip reader. I expressed my surprise to Mr. Craig, telling him that I didn't suppose he would stop to write to Mr. Arms for any information upon a matter of business. His reply was that his time was too valuable and that lip reading was too uncertain in matters of business; that a trifling misunderstanding on Mr. Arms' part in regard to his orders might result in very great loss to the firm, and that when he wished to give Mr. Arms any directions upon a matter of business, he always wrote to him, so that he might be fully understood. Upon other matters, however, Mr. Craig stated that he could converse quite readily with Mr. Arms.

And from that and from other incidents, of a similar character, I am led to believe that in important business transactions a thoroughly business man would hardly trust himself to communicate with a deaf person in that way; he would want to make sure that he was understood, and not leave it to any uncertainty of lip reading.

MR. GREENBERGER — Lip reading, it seems to me, is not any more uncertain than hearing. Now, for instance, the question has been stated before us very plainly, and I think we all hear very well. The Rev. Dr. Gallaudet misunderstood the question, and I misunderstood it also. When I have any orders to give in the institution, I find that hearing is just as uncertain, sometimes, as lip reading. I not only have to tell, once or twice over, what I want done, but I have to go and see for myself what I want to have done, and the next day I have to go in and see if it is done that way, and I very often find even then it is not done as I desire. So, consequently, lip reading is not always more uncertain than hearing.

DR. PEET — To give a little illustration, Mr. President, of how the substitution of a single vowel will make all the difference in the world in the meaning of a sentence: I had the misfortune, once, in a company of deaf-mutes, in going from New York to the western part of the State, to be thrown down an embankment, with a deaf-mute in my charge. The car we were in made two and a half revolutions going down the bank, and we all came back out of it alive. I telegraphed to my father that "None of our party seriously injured," intending to convey the idea that he need not feel anxiety. The telegram had it (and he immediately came on), "Nine of our party are seriously injured."

MR. SIMPSON—Lip articulation has been of great benefit to me.

DR. GILLETT—Do you understand what he says, Mr President?

THE PRESIDENT—Some of it.

MR. SIMPSON—I say I find that in a number of cases articulation has been of great benefit to me in transacting my business. When I was going to school in Michigan I arrived at a station to take the train for a station beyond. At the first station I met a friend and we got to talking and forgot everything. Soon along came the train and I was about to get aboard, when my friend said to me: "Have you the check for your trunk?" The train was about to start and there was no time to lose. My friend handed me his pencil and scratch book; I saw at once there was no time to do any writing, so snatching up my luggage I threw it into the baggage car, saying "Please check to (Holly) first station beyond." Fearing the baggagemaster might misunderstand me or not get the name of the station correct, I put in "first station beyond."

DR. GILLETT—Ask Mr. Simpson how much he uses his speech in the ordinary transactions of life.

THE PRESIDENT—I would like to inquire if Mr. Simpson is what you call a semi-mute.

DR. GILLETT—No, sir, he is a congenital mute; he never has heard.

MR. SIMPSON—I have always been as I am now. The right ear is closed, and with the left I hear a little. Prof. Brockett, of the Michigan institution, taught me to speak.

DR. GILLETT—Mr. President, there is another gentleman here who speaks pretty well, and that is Prof. Emery; I wonder if he will give us his experience.

THE PRESIDENT—Mr. Wing can talk first-rate, I would like to see whether he does it all the time or not.

MR. WING was looked for and found to be absent.

PROF. NOYES—One of our former pupils, a graduate, Mr.

James L. Smith, is here, and he is considerable of a talker, if anybody wants to hear him.

THE PRESIDENT—Will you explain to him what the point is? I want to have him asked to tell the Convention how much help that is to him in business.

PROF. NOYES then interpreted to Mr. Smith the following: "How much help is articulation and lip reading to you in matters of business; in the prosecution of business?"

MR. SMITH desired to be excused.

PROF. NOYES—Mr. President, Mr. Smith wants to be excused; he is a very modest man. But he can talk as well as I can.

DR. THOMAS GALLAUDET—There is Mr. Kelly, he can talk.

PROF. NOYES then interpreted the question to Mr. Kelly, and Mr. Kelly spoke as follows: I do not find that it is any help to me in matters of business. I can read lips very well when I get into conversation with any person that I meet.

DR. E. M. GALLAUDET—Why does he not use it in business if he can talk as well as that?

MR. KELLY—Because a great many persons have a moustache and I cannot see the motions of the lips. (The question was asked of Mr. Kelly how it would be in speaking to ladies, and Mr. Kelly replied: When I meet a party of ladies I can understand lip reading very well.)

PROF. NOYES—Mr. President, allow me to introduce to you and the Conference, Prof. A. G. Bell, of Washington, who has just come in.

THE PRESIDENT—Prof. Bell, we are glad to meet you.

PROF. BELL—Mr. Chairman, I am very much interested in this important question that you are now discussing, and I am sure that all of us would be glad to have definite answers from these young men, who articulate so well, as to whether articulation is of use to them in business. I would advise you to separate the question. You must never forget that articulation is one thing and speech reading is another thing. Now, these young men are able to talk very well; I do not know what their difficulty may be to understand the utterances of others; but I should like to know whether when they go into stores and the outside world, they do not find their speech of value. It may be a one-sided value; if they have not the power to understand, by watching the motions of the mouth, they will not be able to understand what other people say to them; but, is not the power of communicating their own thoughts and their own utterances by word of mouth of some assistance to them in the community? I think that question should be separated, and I should like to know what these young men think of that point, and how they feel their speech is of assistance to them in communicating with the world at large.

The President—That is just what we have been trying to find out.

Dr. Gillett—Where is Mr. Wing?

Prof. Noyes—He has gone fishing.

Dr. Gillett—These two matters are so closely related that it seems to me it is hard to separate the question.

Prof. Bell—Should we not ask definite questions of these young men instead of asking them generally for a statement of their experience? Could we not ask this young man here if he ever goes into the stores and what he does when he goes into the stores—does he write down on paper always, or does he speak, and does he find speech of any value under such circumstances?

Dr. E. M. Gallaudet—Another young man is here who has learned to speak English since he became deaf. He spoke Norwegian before he became deaf, but has since learned to speak English. He is willing to attempt to speak for the Conference in regard to what assistance speech is to him in the prosecution of his business,—Mr. Hanson, who is now a student of the National Deaf Institution.

Prof. Noyes—Mr. President, I should be very glad to have him introduced; he is one of our former graduates. When he came to us he knew very little speech.

Mr. Hanson then said: I almost always used to speak when I went out traveling: then I could understand more of the lip than I can now. (Mr. Hanson made further remarks which were interpreted to the Conference, but which the reporter was unable to record.)

Mr. Greenberger—Has this young man had a regular course?

Prof. Noyes—I don't know what *you* would call a regular course and I cannot say that he has had the same course you would give in New York, but he has had a practical course, and you see a little of the result of the course he had here. When he came to us I hardly think he knew a single English word. At the time he was here we didn't have a special teacher of articulation, but we put all the articulators into one class and they were taught articulation, and articulation was largely made the medium of communication and of instruction; and this is one of the results.

Dr. Thos. Gallaudet (interpreting)—Mr. Hanson says he frequently puts the two together, and he can speak and make the clerk or storekeeper understand him when he asks a question, but that the answer is rather indistinct about figures and practice, and if he does not catch it he just takes his pencil and paper and asks the clerk to write back what he wants; but, for his own part, he can speak and get on quite well with persons that he meets around that way in business. That he finds it difficult to read from the lips of others who speak to him, and so he has paper and pencil all ready to supplement, as it were, the conversation, by writing when necessary, so as not to waste any time, but to hurry right along.

At this point, Mr. Wing having come into the room, he was called upon to speak upon the matter under discussion, stating his custom. He replied, saying that he depended a good deal on the trumpet.

Prof. Bell—But do you not speak yourself to hearing persons, or do you prefer to write?

Mr. Wing—I generally prefer to write, because people who do not understand my speech clearly understand writing, and I prefer to write to them.

Dr. E. M. Gallaudet—You then prefer to write because it is more exact than speech, which is liable to be misunderstood, having some imperfections?

Mr. Wing—Yes; and again, I feel more confidence in writing.

Prof. Bell—I think there are two questions involved in this discussion: one question is, as I understand it, whether you find articulation, that is, simply speech, of use; the other question is whether you find speech reading, or understanding by watching the movements of the mouth, of use.

Mr. Wing—It may be simply my habit that gives me this feeling. If I were accustomed to use my eye-sight entirely, I might rely upon this method more than I do.

Prof. Bell—Yes, but in regard to your speaking yourself—do you find your speech of any use to you whatever?

Mr. Wing—Of course it is.

Prof. Bell—Ah, that is what we want. Now, we want to know also of what value you find your speech.

Mr. Wing—But the question is about my business. If I am with a business man and have much business, of course I want to know every point he is driving at, and therefore I make that man write it down in black and white.

PROF. BELL—Yes, but what do you prefer to do yourself? Do you prefer to write or to speak to him?

MR. WING—I prefer to write, of course. I prefer to speak where I am sure they can understand me.

PROF. NOYES—Mr. President, as one example, to illustrate a certain phase of this work—we have a graduate—I might say he is a distinguished graduate, for he is in certain respects a remarkable person. He is the head bookkeeper in the Security bank of Minneapolis. The officers in charge of the bank regard him as the most reliable bookkeeper and accountant they have in the whole establishment. He is an excellent penman and a very excellent scholar. In matters of business in the bank requiring accuracy and definiteness, he invariably, I think, uses his pen. In social life, at the table and when with some of his friends, he uses articulation quite readily; but when it comes down to a matter of business, when it is something that must be definite and can be relied upon and needs the accuracy of figures and of definite language, it is the written language that he uses.

MR. GREENBERGER—Mr. President, it seems to me that a great deal depends upon the course of training which a deaf articulator has. If it has been a thorough instruction in lip reading he is able to read the lips well, and particularly if he has not been discouraged to use his voice and is encouraged to depend upon his power to read the lips he will rely upon it more than he otherwise would. If a deaf person is told that his speech is harsh and disagreeable to others and that others do not like to hear it (he cannot hear his own voice) and if he is told that signs are more beautiful than imperfect speech, of course he will decline to speak and will not depend so much upon lip reading; he will not have the practice, and consequently will be a poor lip reader. A great deal depends upon that.

THE PRESIDENT—I would like to inquire of Mr. Greenberger—if he asked you about that matter wouldn't you tell him the truth?

MR. GREENBERGER—If he asked me what?

THE PRESIDENT—Why, whether his voice was disagreeable or not?

MR. GREENBERGER—If he asked me, I would certainly tell him the truth.

THE PRESIDENT—And if he asked you whether signs were not more beautiful wouldn't you tell him the truth if you told him anything?

MR. GREENBERGER—I would tell him the truth, and I would tell him that spoken language, and in my opinion, that imperfect speech, is far more beautiful than the most beautiful expressions by signs, and parents, as a rule, would rather hear the most imperfect speech than to see the most beautiful signs. That has been my observation.

MR. WILLIAMS—I think this depends, Mr. President, very largely upon individual cases. I have in mind two cases, of girls, who graduated from our institution at Hartford, who were both stone deaf. They were both in that condition when they came to us, having lost their hearing when five or six years of age, but it was some five or six years after that time that they came to the institution. Their education was carried on (as we carry it on there) by the combined system. The first one of those girls (who left some four years ago, I think,) disliked articulation, disliked lip reading, avoided it all the way through, wouldn't do any more of it than she was obliged to do. I wanted to find out how she got along in regard to communicating with people about her. She worked in a shirt factory in New Haven. I asked her how she communicated with her employers and the girls about her, and how she communicated with her friends and how she communicated when she went out shopping, etc., and that girl wrote to me that she does not use the manual alphabet, she almost always never writes a word, but she communicates orally with her shopmates or her employer, but when she goes to the stores she has very little difficulty in making any of the people understand her and has but little difficulty in understanding them. The other girl left us two or three years ago this summer, I think. She is totally deaf, too; and she has about as great facility in communicating with people in general as this other girl. Well, they are exceptional cases.

MR. DOBYNS—I have no doubt but every superintendent in this room could give particular instances in his school of some boy or girl who lost their hearing and still can talk very well and make you understand what they mean; and the witnesses we have had on the stand seem to be semi-mutes; I propose now to examine a congenital mute, one who never heard a word in his life and who never spoke a word until he learned to speak in some institution. Let us call up some such one as that and see what that boy or girl can do,—see what benefit his or her articulation has been to them. If Mr. Greenberger can give an instance in his school of a pupil who was born deaf or lost hearing so soon that it amounts to congenital deafness, and who never spoke until he came to his institution, let him tell what such a pupil can do.

MR. GREENBERGER — Mr. President, the cases of which I spoke the names and related were all such cases as this gentleman asks for. I could speak of semi-mutes and semi-deaf, who could speak some when they came to us, or who were not totally deaf; I could tell you a great many more, but all those I have mentioned to you were totally deaf. The first one I mentioned was a mute when he came to us and totally deaf, and the other one that I mentioned as being in the furniture factory learning to be a carver, whom the foreman said he would not have taken the trouble of teaching a trade unless he could speak and read the lips, is a congenital mute. The third one I spoke of was three or four years old when he became deaf.

MR. DOBYNS — I have a little boy three years old that can talk just as well as I can.

MR. GREENBERGER — Yes, but if he becomes deaf then and remains so until he is seven years old, he is a mute when he comes to school.

MR. DOBYNS — I know one gentleman, in the Missouri institution, who lost his hearing when three years old, who still retains his power of speech.

MR. GREENBERGER — But these are exceptional cases. These were mutes when they came to us.

I forgot to mention one case, that of a little girl who left us four years ago. She is a congenital mute, she never heard. And when she left school her mother put her in charge of a millinery establishment where she has twenty-five girls working under her. Her mother tells me that she understands all of those girls — she always speaks to them, and they speak to her. If a new girl comes into the shop, for a day or two, there will be some difficulty, but it does not take more than a few days before they understand her thoroughly well. She has charge of the entire department.

THE PRESIDENT — It is expected to adjourn at half-past five; there are now eleven minutes before the time expires.

DR. E. M. GALLAUDET — Mr. President, I ask just a moment to beg the consideration of the Conference to the question before us in an aspect which perhaps has escaped the minds of a good many who have discusssed or attempted to illustrate the question. A little while ago my brother referred to the fact that he could cite hundreds and hundreds of cases of persons who had no speech and no power to read speech, had got on perfectly well in business, and so on; it was said immediately that that was not to the question. In a certain sense it was not, but if you will allow me to ask your attention to this aspect of the question, I think it will appear, that, after all, not a very great deal of positive and decisive light has been thrown upon this question by the discussion of the merits of the fact thus far.

The question is, of what practical value, in other words, of how much practical value. This question asks that the value of speech, of articulation to the deaf in the prosecution of business, should be measured. Now, Mr. President, it is very common for persons, when the oral education of the deaf is being advocated, to speak of the benefits of speech to the deaf as exceeding great. I venture to maintain that it will be generally admitted. If I may make just a personal allusion to my own attitude in regard to articulation, I will say that I have not been one, during the last ten or fifteen years, whom it has been supposed undervalues articulation for the deaf; I have been ready to concede that it was an important feature in their education. It is but a feature; we can have brought before us men and women who would be most voluble in speech, and we might take the fish-wives of London and possibly they could out-talk some of us here, as well as we have tried to talk to-day, they might have a readiness of speech that would startle some of us. It might be speech such as we could bow down to — that they could talk so much and so well — yet they would stand down very low in the idea of educated people. I say, Mr. President, I want to lay just this little emphasis upon the fact that while speech is a matter of importance in the education of the deaf, (I will go further and say a matter of great importance,) it is not in my judgment what it has been claimed to be in many formal expressions of opinion, coming from bodies of much dignity, and which have assumed to exercise much influence in the world, and whose opinions have been quoted and spread throughout the whole length and breadth of Christendom, it is not the matter of paramount importance in the education of the deaf. It is not a thing which weighed in the balance — what is the real education of the deaf — would by comparison I urge, even be successfully claimed to be a thing of very great importance. I said a moment ago I would admit it was of great importance, but when we take it as it stands and at its value, we cannot claim that, relatively, it is a thing of very great importance in the education of the deaf. It is of importance, I admit it, and where it can be successfully imparted to the deaf, it is a great help to them in the prosecution of their business; but now we are asked in this question, Mr. President, to measure the practical value of articulation to the deaf in the prosecution of business. Now, Mr. President, I do claim (if I may be allowed to so claim and not be considered out of order), that when we have the fact before us in this country, that now for a period of sixty or seventy years men and women, deaf from birth and dumb to death, have lived, have loved, have labored, have built homes, have paid taxes, have supported themselves, have helped to bear the burdens of society, have taken hold upon the grand prospects of the future life, have lived and walked and died as noble specimens of humanity, who have fulfilled their parts in society, who have prosecuted various sorts of business with eminent success,—who as a class, (this class of deaf and dumb people who have lived here in this country,) when I say they have done all this, we have a little different understanding of just what this question means.

And I must say, Mr. President, I doubt whether it is a question that can be answered. It is one of those questions which has been valuable in bringing out discussion, which has been useful in bringing to our notice facts; and, for one, I should be ready to grant, as I have been all these years,—as I was in the year 1870, when at Indianapolis, in a large convention of teachers of the deaf and dumb, because I had ventured to publish a report in that year or a year or two before, urging the introduction of education in speech into all the institutions of the country—when at that time I had been called in open convention, "a renegade son of a worthy sire,"—and since which time I have tried to be consistent in my urging that teaching of speech to the deaf, and the multiplication of schools for the deaf, in which speech should be taught and the addition of classes for the deaf in institutions where they were to be educated, and the purging of the old system (if I may so call it) of any and of all of the elements of failure which may be found in any part of the land in any school, when I stand before this Conference, Mr. President, as the advocate of speech for the deaf, to every one and all if it be possible (and if not possible to all, then to the greatest possible number, and in the best possible means), I still beg leave to offer the weight of my humble opinion that it will not do for us to claim that in the prosecution of business—in the success of life, when a thousand of those things which come in to make up successful human living—that speech and speech reading is of such immense practical value that we should impart it or attempt to impart it at the sacrifice of any of the essential or the important elements of a good, complete, rounded education; and I believe that all of my oral friends (if I may so characterize them) will agree with me in that.

I think the consideration of this question has been of interest and of value, and if we can bear in mind this, that deaf and dumb people have made their way in the world as well as deaf people who are not dumb (as well, I say,) over and over again (it certainly has been done), the fact remains which cannot be successfully disputed, why then we must not tell the world, we must not give the idea to the world that speech for the deaf is the thing that is above and beyond everything else. I have heard that claimed, I have heard it claimed in deliberative bodies, I have heard it claimed where it made my heart ache, because I felt it was an idea that was being put forward by men and women who were not true friends of the deaf, and they wished to convey to the world the idea—and indeed they said it in so many words—that speech for the deaf is the education of the deaf, which it is not and which they knew it was not.

Now, Mr. President, I hope that in this Conference we shall move and march together with that harmony which has characterized us on so many former occasions; and this question which I venture to say when it was read and first considered, our oral friends may have thought that perhaps it was introduced by some one on the other side—if there is any other side—well, there are other sides in this sense, if you have a beautiful prism, it is beautiful on all sides—so I hope we all have beautiful sides in striving for the education of the deaf, there is no such side where we are in antagonism; there is only one prism. So this question has brought out a discussion which it was thought, perhaps was asked by the friends of the manual method to see if it could not be shown that after all speech was not of very much practical value in the prosecution of business. Nothing was further from the thought of those who brought in this question; but we want to measure its value, we want to take it at its value. We don't want to pass brass for gold; we want brass and silver and copper to pass at their true value, and when we come up to the gold we want all to know and admit what that is. It is the training of the mind, it is the training of the heart, it is the formation of character, it is the making of boys and girls into men and women for whom it is worth while to live, and for whom it is worth while, too, the country should live.

Prof. Bell then rose to speak.

THE PRESIDENT—If the discussion is continued the Convention will have to extend the time.

On motion of Dr. E. M. Gallaudet, Prof. Bell was allowed time to address the Conference.

PROF. BELL—Mr. President and ladies and gentlemen: I must say I am astonished to come into this Convention and hear the subject that is being discussed. I am astonished, I am pained. To ask the value of speech? It is like asking the value of life. To measure speech? To measure the value of speech? It is immeasurable. Mr. President, I speak from practical experience; my wife is deaf—

DR. E. M. GALLAUDET—My mother was deaf and dumb to her dying day.

PROF. BELL—My wife speaks more imperfectly than these gentlemen we have heard to-day. She understands what I say almost as well as though she could hear; not quite as well—almost as well as though she could hear. She prosecutes the business of every-day life with wonderful ease and in a way that she could not do were she obliged to resort to writing alone. She goes into a store, she asks for what she wants, she asks the price of things and receives an answer and understands; but did she not understand, has she not paper and pencil? have you not all paper and pencil? do we not all resort, in business matters, to paper and pencil? Paper and pencil, of course, are always more definite than speech for each one of us, but in regard to the value of speech—it cannot be valued, *it cannot be valued.* If we attempt it, we must not measure the value of speech by its perfection, but by its intelligibility. What is the object of the education of the deaf and dumb, if it is not to set them in communication with the world?

DR. E. M. GALLAUDET—That is one object, but a small part of it.

PROF. BELL—That is one object and the greatest of all objects. Now, if we examine how far these objects are attained, we find that by one method of instruction a deaf child learns to read and write, and also learns a language that I admire—a language of signs—but it is of no use in communicating with the world; it separates him from the world. When he comes to communicate with the world his only means is by writing; but the child who has been taught to speak not only has all the advantages that those who are educated by signs or the manual alphabet have, but he can read and write as well as they, and in addition to all that he can speak; and those who have acquired the art of understanding the speech of others have their hearing, as it were, in part restored.

I must say, it has pained me to hear this discussion. I should like to come into this Convention and go hand in hand with every member here in attempting to give every child the power of speech, and every child the power of understanding the speech of others. But as to the discussion of the value that speech has —it is of inestimable value. If we look at the ideas that are prevalent in the popular mind concerning the deaf and dumb—the prejudices that we all have to remove—we find they speak from lack of knowledge; the public do not understand the condition of a person that is dumb. A deaf child who speaks, however imperfectly, is looked upon by the world more as an ordinary being than as a deaf-mute. Speech brings the deaf child closer into companionship with hearing people, and I hold that the great aim of the education of the deaf and dumb is to bring the deaf into more close contact with the hearing in order to restore them to society. In regard to the branches of education—those who speak are not to be debarred from acquiring all the information that those who are not taught to speak acquire, and in addition they possess this inestimable art of conversation by word of mouth, and the power of understanding the speech of other persons.

MR. GREENBERGER—Mr. President, I will not take more than one minute if you will allow me to speak. I want to say one word.

THE PRESIDENT—Shall Mr. Greenberger have one minute?

Cries of "Go on," "Go on."

MR. GREENBERGER—All I wish to say is that I have the highest respect and regard for this assembly collectively and individually, but I must say, in very simple language, that people who are willing to pay for the fiddling are entitled to the fun; the parents who have deaf children and are bound to have them speak are the ones to decide the value of speech, and not this assembly.

DR. E. M. GALLAUDET—I have met many persons that have said they would not have their children taught to speak under any consideration, after they had visited the school and heard the children attempt to speak.

Mr. H. A. Turton (superintendent Institution for the Deaf and Dumb of Kansas)—Mr. President, I have received letters from parents requesting me to take their children out of the articulation class, that they were not making the progress they would have done, and their speech was no benefit to them.

The President—Gentlemen, I think you want a little sunshine and a recess.

The motion was made to adjourn until to-morrow morning at half past nine.

The President—The Convention *is* adjourned until to-morrow morning at half past nine.

THIRD DAY.

Friday, July 11th.

The morning session of the Conference opened at 9:30 o'clock, President Mott in the chair.

After prayer by Rev. Mr. Shapard, of Texas, the minutes of Thursday's meetings were read and approved. Reports from committees on credentials and business were presented and adopted.

Mr. Williams, chairman of the Committee on Publication, reported favorably a work in manuscript upon Arithmetic by Miss Barton of the Portland, Me., Oral School. This work is the result of several years' experience, and has been prepared with a special reference to the needs of the deaf in this branch of study.

Dr. E. A. Fay, (of the National Deaf Mute College, Washington, D. C.)—I have had an opportunity to examine Miss Barton's book, and am sure that it is adapted to be very useful in the education of the deaf. It contains a great variety of examples expressed in simple language, and cannot fail to give deaf children the familiarity with the language of the business of life that they so much need.

Some of the members of the Conference are aware that the young men who come to Washington to be examined for admission to the college are found deficient in arithmetic more often than in any other study, and the teachers who have conducted their preparation are sometimes surprised at that result, knowing that their pupils have gone over the ground required. Now it is often the case that these young men who fail to pass the examination are acquainted with the processes of arithmetic; if rows of figures are set before them in proper order, they can add, subtract, multiply, divide, change fractions to smaller or larger terms, calculate interest, etc., but the trouble is that they are not familiar with the nomenclature of arithmetic; when a paper is given them containing examples and problems in English, without any indication of the processes by which they are to be solved —such problems as they must meet with in the business affairs of life—they are at a loss how to solve them, and so fail to pass the examination. If they had had the drill of Miss Barton's book, I am sure this would not be the case.

Another great advantage of the book is that it compels children to think for themselves. Abundant help is given, but the examples are not solved for them; the pupil's own reason must be exercised to obtain the answers. The problems are numerous, and there is frequent recurrence to principles previously taught. No child can possibly go through the book without accomplishing two most important results: first, acquiring the language of business and of arithmetic; secondly, learning to think and reason for himself.

I hope all the members of the Conference will examine the book, and give Miss Barton such assurances of their purpose to give it a trial in their institutions that she will feel justified in having it printed.

PROF. A. GRAHAM BELL read a dispatch from the secretary of the National Convention of Teachers of Madison, Wisconsin, stating that Wednesday afternoon next had been assigned to the presentation of educational work among the deaf.

PROF. NOYES tendered an invitation to the members of the Conference from the citizens of Faribault to a drive to the most interesting points in its vicinity; also a notice from the Northern Pacific railroad extending the same railway courtesies to members of the Conference as had been extended to the members of the National Teachers' Convention at Madison.

MR. JOB WILLIAM'S paper was then read, as follows:

A SYSTEM OF EDUCATION ADAPTED TO ALL DEAF-MUTES, NOT EXCLUDING THE FEEBLER-MINDED.

Throughout the United States of America schools for the deaf, whatever may be the system of instruction employed, are maintained wholly or in large part at the public expense, and are for the benefit of *all* who are too deaf to be taught in the public schools, but whose mental capacity would entitle them to an education therein, were they possessed of hearing. The brilliant minds among this unfortunate class may be successfully taught by either the oral or the manual method, or by the combined method. Where quick perception is added to rare mental endowment, the oral system may be better, especially in the case of semi-mutes, the advantages outweighing the disadvantages. Where quick perception is wanting, though there may be rare mental capacity, there is little doubt that the combined system will produce a far higher average of results than would the oral system in the same case. In that large percentage of the deaf (perhaps a little larger among the deaf than among the hearing) who possess neither superior minds nor unusually quick perception, nearly all are willing to admit that the manual method is the only one by which satisfactory results may be attained. Unfortunately these distinctions in the condition of our pupils are not given sufficient consideration in all cases, and as a consequence, many a child is allowed to suffer in his mental development, and to an extent unknown and undreamed of in our public schools, and that would not be tolerated there; pupils are shut out from school and condemned to grow up in ignorance, a burden to themselves, to their friends and to the community, on the ground that they are too weak in mind to receive instruction, when, in fact, the fault is not in the child's mental capacity, but in the system employed by his teachers, as applied to him.

Within a few months one who occupies a high position as an educator of the deaf and who is an enthusiastic oralist, in comparing the pupils of the manual schools with those of the oral schools, has said that the manual schools (I quote directly) "are apt to gather up all that they can find, regardless of age or mental capacity." * * "Their desire to have a large number of pupils is too great." "This desire often leads to the admission of pupils who are so deficient in mental ability that they more properly belong to an asylum for feeble minded children." "Some of them are too old to make much progress in education." "Nowhere else are there so many unfit scholars to be found in schools for the deaf as here." "If you compare the appearance of the generality of articulating scholars with the dull, sullen and uncouth looks of the pupils of sign schools, you will find the difference to be as great as it is between the members of a congregation of a Fifth Avenue Church, and the inmates of a penitentiary." These things were said not in heated oral discussion where there was little time to weigh the force of words, but in cold type with ample time for deliberation.

The writer of this article once asked the author of the above quotations if he received all deaf-mutes who applied for admission to the school over which he presided. "Oh, no," said he, "we do not want idiots. We send them to the Institution," naming a manual school near by. Further conversation developed the fact that the term idiot, as used by him, included a large proportion of those possessing less than average ability.

Another repudiator of the use of signs as ordinarily used by the manual schools in the instruction of deaf-mutes, speaking o the working of his system among the pupils of the school over which he presided, said, in substance, not long since, if a pupil is not able to make good improvement without the aid of signs, as used under the combined method, I say to him, the progress you are making is not sufficient to compensate for the money which the State is spending for your education. You must go home. So the child is left to grow up in ignorance.

Now, I wish to submit to this company of educators of deaf-mutes, whether such treatment of deaf-mutes as is indicated by the foregoing quotation, is just to them. Is it Christian? Is it even humane? Do not those children, possessing degrees of mental ability between idiocy and mediocrity, have as strong a claim upon our sympathy and our aid, as do those of higher mental endowments? Is not their need even greater than that of their more gifted brethren? Are we not placed in our positions to labor for the education of *all* deaf-mutes, rather than to secure brilliant results and gain credit for our methods, while aiding only the better part of that class?

How would it work in our common schools to teach only those children having good mental endowment, and leave the slow and the dull to get on as best they could without the assistance o school instruction?

The above quoted charges, intended as a reproach to the manual schools, we receive as a high compliment to the philanthropy and Christian spirit of the managers of those schools. Such schools receive *all* whose mental capacity would entitle them to admission to our common schools, if they possessed hearing. They exist for the elevation of deaf-mutes as a class, not solely for the specially gifted among them. Such they gladly receive, and they claim to do as good work in and for them as is done anywhere. But if a child's mental condition does not give promise of brilliant success in his education, they labor with and for it just as faithfully, as earnestly, as they do with those possessing a higher order of mind, and oftentimes with results which, though less in amount, are equally marked. A dull class requires from its instructor as much skill, as much tact, as much versatility, more patience, more perseverance, more cheerful courage, than a bright one, and the teacher who can make even moderate progress with such a class, certainly deserves no less praise than the instructor who makes long strides in progress with a class possessing superior mental endowments. The actual improvement in the mental and moral condition of the child is often greater in the former case than in the latter. That this class of pupils do not call forth the applause of the unthinking part of the public we are aware, but to gain that is not the chief aim of our schools. It is the glory of the schools employing the combined method of instruction, that they are able to reach all grades of mental ability, and to give to each child as much instruction as his mental capacity will enable him to hold. They do not profess to furnish brain power, but the sign language enables them to guage unerringly the mental capacity of a child, and to cultivate and use all the mind that it has, be it much or little.

Let me cite a few facts. Some years ago a bright boy, who lost his hearing at four months of age, was found in the streets by an enthusiastic advocate of the oral system, who took him in charge and endeavored to teach him articulation and lip-reading. After a protracted effort in that direction with no apparent success, it was decided that the cause of the failure must be mental weakness, and the boy was accordingly sent to a school for feeble minded children. After two years of experiment there it was discovered that the boy was not an idiot, but was simply deaf, and accordingly he was sent to a manual school for instruction. He had learned to write a few words and found his mental level in a class of three or four weeks' standing. He proved to be a boy of more than average ability, a fair language scholar, and in arithmetic one of the quickest and most accurate in his class. In all his studies he did well, and, after six years of instruction, left school that he might go to work. For ten years he has had steady employment; from his earnings has provided a neat and comfortable home for his wife and little ones, and, as the fruit of his industry and economy, has quite a sum of money credited to his account in the savings bank. He is able to make his way anywhere and to do business with any intelligent person. He is an honest, industrious, thrifty and respected citizen.

Let me state another fact. A son of a Massachusetts farmer lost his hearing at the age of five and a half years. Being a semi-mute, as was natural and right, his parents desired to have him keep up his articulation. They went a step further and determined that all his instruction should be received through articulation. Accordingly the boy was placed in an oral school from which signs were rigidly excluded. He did not prove a promising subject for instruction in that way. His failure was attributed to mental incapacity, and his father was urged to place him in the school for feeble-minded children at South Boston. Not satisfied as to the correctness of the teacher's conclusion, his father took him to a manual school to see what could be done for him by the combined method of instruction. He proved to be a bright boy, remained nine years, and graduated with credit from the first class. He is an intelligent man, honest and industrious, with steady work and good wages.

As an example of a different class of cases, let me instance the following: A bright boy lost his hearing through sickness at the age of five and a half years. He was sent to school and taught by the oral method for seven years. His progress in articulation and lip-reading was excellent. His parents decided to send him to a manual school, where it was found that his mental progress had been such only as to qualify him to enter a class of four years standing, and in no respect was he in advance of the average of the class. He continued with the class three years till their graduation and then entered the Deaf-Mute College at Washington.

A bright girl, deaf in infancy, at the age of eighteen entered a manual school after having received instruction for eleven years by the oral method. Her lip-reading was remarkably good, and her articulation such that she could generally be understood by strangers, after they had become a little accustomed to her voice. Her mental attainments were only such as to qualify her admission to a class of six years standing, and her scholarship was not above the average of the class.

Though both of the last two pupils mentioned were considered by their oral teachers very successful in acquiring articulation and lip-reading, yet it cannot be claimed for either of them, as is sometimes done in such instances, that the progress, even in these branches, through the oral method was so much greater than it would have been through the combined method, as to compensate for the loss of time in mental development, for in neither case was the articulation or lip reading much superior to that of pupils of equal native ability who had been instructed under the combined method, in those special branches, much less time than they had been under instruction by the oral method.

Let us apply another test to these two systems. Several years ago a boy, who became deaf at the age of two and a half years, and who had been under instruction by the oral method for ten years, entered a manual school at the age of eighteen. He had been accustomed to describe pictures and to write imaginative stories suggested by them. To test his ability to express his ideas in the English language, a picture was placed before him and he was told to write the thoughts which were suggested to his mind by it. Next, the same picture was placed before a toto-congenital mute, who had been two years under instruction by the manual method, and the same directions were given to him as to the first boy. Then the same picture and the same directions were given to a toto-congenital mute, who had been under instruction by the manual method only four years. No suggestions whatever, except such as the child received from the picture itself, were given to any one of the pupils. All three of them were bright and, as far as we could judge, of about equal native ability.

The three following compositions were the result of the experiment. They are given *verbatim et literatim* and in the order of their mention.

The picture, entitled "Temptation," may be found in the Junior Chatterbox for 1879.

[By a pupil who had been under instruction ten years by the oral method.]

A woman is poor, and a man gave Barrel apple to her, and she have no money. She was think and Will sell the apples. She sat in the street, and some people want eat apples & we gave money to her about it. Two Boys asked her How much cost ɐ apple. She said 5 cents. He don't pay it, and we walked all around in the street and Woman stay is too long time because she is very tired and two boys saw her and he walked no noise thief and ran off. He are very Bad boy because we thief apples to poor woman. Two boy are not pretty He are Bad & thief—A apple on the table in side walk. Why we was thief apples. I think because we was *very very* hungry. Will he are very bad boy made hungry. I think A woman is cold day—Basket on the table or ground. Cloth & Box & umbrella on the Basket. I saw picture about Two Boy & woman & apples & Basket—*Brick* Look *like is* Bad Boy.

[By a toto-congenital mute who had been taught two years by the manual method.]

Last summer a woman sold many apples near a house. She sat on a chair. Soon she slept. Two bad boys walked. They saw the woman sleep. One of them walked quietly. He took one apple out of a box. Many apples rolled and fell on the ground. The noise awoke the woman. The woman stood up. She saw two bad boys. She took an umbrella out of a basket. She struck the boys with the umbrella. The umbrella broke. The boys were frightened and ran. The woman put the apples into the box. She kept the apples in the box. She did not sell the apples. She went home.

[By a toto-congenital mute taught four years by the manual method.]

An old lady had many apples. She looked poor and she wished to earn. She thought she would like to sell many apples. She carried some apples in a large basket. Then she put the apples on the table. There was the basket, an old umbrella and a bushel under the table. One day, while she was sleeping near the table, two boys saw the apples on the table. They saw the old lady sleeping near the table. One of the boys stole one of the apples. When the boys ran away, the old lady awoke and saw the boy eating the apple. She screamed and called them. The boys refused to come to her. The old lady told them that she would call the policeman if they would not come to her, but they refused to go. The old lady saw the policeman walking in the street. She called him and then the policeman came to her and said to her, "What is the matter." Then the old lady told him that while she was sleeping, the boy stole one of her apples and ran away. The policeman was very angry with the boys. He looked for the boy who stole the apple from the lady. At last he found the boys near the tree. He caught them and led them to the lady. One of the boys, who did not steal the apple, told the policeman that the other boy stole the apple. The policeman caught the boy who stole the apple and put him in prison in a few days. In a few days the boy was very sorry. He told the policeman that he promised not to steal anything again. He led the boy to the lady. Then the boy told her about the things and asked her to forgive him. She was very kind and forgave him. The boy went to his home. He never stole anything again. He was happy.

I have tried to state the above cases fairly and I believe that I have succeeded in doing so. Yet I am aware that there is some ground for the criticism that it is impossible to tell what varying conditions there may be in minds of apparently equal strength and force. Where the variation is all in one direction, however, the presumption is very strong that it arises from the same cause. In these cases we should attribute it without fear of successful contradiction to the method of instruction.

But to avoid even the slightest suspicion of injustice, let us take the same pupil under the two systems and see what results we find.

A boy much above the average in strength and sharpness of mind was placed in an oral school where he remained for one and a half years. At the end of that time he was transferred to a manual school by his parents. When he entered the latter school what articulation he had acquired was well nigh unintelligible. He had learned quite a vocabulary. What practical use he could make of it, the following letter, which is an exact copy of one written by him a few days after his arrival there, will show:

HARTFORD, Oct. 12, 1882.

DEAR MOTHER AND A.—

I am going the go. The wants are apples on box of school. Louis boy good all the time read. Mother her good in the a little to come for Mother dollars $2.00 wants to come Louis or call Fred and Jennie to be love sorry. The come little for The boots wants on come Miss W. on school the teacher that see you very Louis. He playing all the time good school likes. Mr. P. W.

the keeps. Sleep night eight morn on the hats wants home box come school reads all the time very White Good eats many fats Louis very good Boys house playing rain on the Wet Louis boots wants come on the cold snow Louis help Mr. S. the boys calls all the time Louis talks teachers Miss R. Boys cries all the time reproves Miss W.

The following is the unaided production of the same boy after he had been under instruction by the combined method just six months.

[A few days before it was written two traveling showmen with a bear visited the asylum yard and performed for the entertainment of the pupils.]

HARTFORD, April 2, 1883.

MY DEAR MOTHER:

I send the letter to mother. Tuesday me see a bear. Two men and bear come. Mr. W. leads two men and yellow bear. The boy walks and runs. The man throws a stick at the bear. The bear takes a stick. He climbs a tree. We stand near the bear. The bear is funny. We laugh at the bear. The bear is not cross. He is kind. The man shakes the bear. The bear kisses the man. Some boys stroke yellow bear. The bear scratches almost one boy, many girls looks at a bear. An other man holds a hat in the hand. Mr. W. and Mr. W. give some money into the hat. The man thanks them. Two men and bear go. We wave our hats. Many boys run to school. The boys fail on the floor. Mr. W. laughs. I am well. What does mother do? I think of my mother. I do not expect to letter from mother. Are you well? What does James do? I love mother. I write the long letter. What does Harry make in the shop? I am proud. I study my lessons all the time. I try to become a good boy. I make round tables all the time. I am not tired. We play ball. I am happy. I said mother shows the letter to A. I said Harry writes the letter. He sends the letter to me. I do not expect Harry's letters. How many horses has Harry? I see Harry's horses. What does Mr. P. do? C. is sick. He stays at home. He is better. C. comes. I see C. Miss K.'s mother is very sick. She does not come to school. Mr. F. teaches Miss K.'s class.

Take another similar illustration. The two letters following were written by the same pupil,— one who had been under instruction by the oral method, for more than five years, before entering a manual school. The first was written a few days after her admission to the latter school, and the second after she had been under instruction by the combined method for six months. Both are unaided productions and are copied *verbatim et literatim.*

HARTFORD, Nov. 3, 1879.

MY DEAR MOTHER: I like sews somethings cloths. I have went to store. I like see the store. Hughs gives to me and reads paper. I will to thank you and the reads paper. I am glad to letter. A—. L—. gives to me and nuts. I like to A—. L—. My teachers names is Miss W. Please give to me write letter the Marys. I like to school. You have to very well. Last Sunday I reads the books. I am very tired. Place give to me and stamps sister Marys. Do you like to school. You have the works. You sews the somethings cloths. You are well. I read the books. I like to school. I see the store. I have to beautiful. I walked see the tree.

HARTFORD, June 1, 1880.

MY DEAR MOTHER: I hope you are well and happy. I like to wash the dishes and work. I am well. Last Saturday I did not go to the city. I went in the yard. They sat on the seat and were quiet. In three weeks all the pupils shall go home and will be happy. Last Friday Miss W—. gave the dates and lemonade to the pupils in her class. The pupils ate date and drank lemonade and liked them. The pupils thanked Miss W—. She was kind. Sometime I shall go in Boston.

Your loving daughter.

Other cases where the improvement has been as marked as in those just quoted have come under my observation, but these are sufficient to illustrate my point. For the sake of brevity I have condensed into the following table facts which might easily be expanded into many pages. Not a case is given of which I have not personal knowledge, and so far as I know the table embraces every pupil who has entered the school, with which it is my fortune to be connected, after having been previously instructed by the oral method. Excepting two—the one of whom died soon after entering school, and the other of whom had so much hearing and has attended the public school so much as to make it difficult to tell just where the credit of his attainments belonged.

[Because of the difficulty of characterizing the mental development in any concise way, I have adopted the plan in column four of the following table of gauging that development by the standing of the class which the pupil's attainments qualified him to enter; *e. g.*, the mark 2 in that column indicates that the pupil against whose name it stands was able to go into a class of two years' standing and work fairly with the class. The mark 0 in the same column indicates that the pupil was qualified only to enter the youngest class in school.]

	Age when deafness occurred. 1	Time under instruction by the oral method. 2	Age when admitted to the American Asylum. 3	Mental development when admitted to American asylum. 4	Attainments in articulation at admission. 5	Attainments in lip reading at admission. 6	Mental capacity as indicated by progress und'r the combined method. 7	Progress in articulation under the combined meth'd. 8	Progress in lip reading und'r the combined method. 9
1	⅓ year	2 yrs at scl for idiots.	13 yrs.	0	Poor.	0	Good.	0	0
2	5½ yrs.	6 wks.	9 yrs.	0	0	0	Good.	0	0
3	5½ yrs.	7 years.	15 yrs.	4 yrs.	Good.	Good.	V'ry good.	Good.	Good.
4	4 years.	9 years.	15 yrs.	5 yrs.	Poor.	Good.	V'ry good.	Fair.	Good.
5	1 year.	4 years.	15 yrs.	2 yrs.	V'ry poor.	Poor.	Fair.	Poor.	Poor.
6	Congen.	4 years.	13 yrs.	0	0	0	Fair.	0	0
7	3¾ yrs.	6 years.	12 yrs.	1 yr.	Poor.	Poor.	Poor.	V'ry poor.	V'ry poor.
8	2 years.	6½ yrs.	15 yrs.	2½ yrs.	0	0	Good.	0	0
9	2 years.	5½ yrs.	15 yrs.	1 yr.	V'ry poor.	Poor.	Fair.	0	Good.
10	2½ yrs.	10 years.	17 yrs.	4 yrs.	Fair.	Fair.	Good.	Good.	Good.
11	Congen.	2 years	10 yrs.	0	0	0	Fair.	0	0
12	1½ yrs.	11 years.	18 yrs.	7 yrs.	Fair.	V'ry good.	V'ry good.	Good.	Good.
13	Congen.	3 years.	10 yrs.	1½ yrs.	0	0	V'ry good.	0	0
14	Congen.	3⅓ yrs.	11 yrs.	0	0	0	Poor.	0	0
15	5-6 yr.	⅓ year.	10 yrs.	0	0	0	Poor.	0	0
16	Congen.	....	8 yrs.	0	0	0	Poor.	0	0
17	Congen.	1 year.	9 yrs.	0	0	0	Poor.	0	0
18	1½ yrs.	5 years.	12 yrs.	1 yr.	0	0	Fair.	0	0
19	Congen.	1½ yrs.	15 yrs.	1 yr.	Poor.	Poor.	V'ry good.	Good.	Good.
20	½ year.	....	8 yrs.	0	0	0	Fair.	0	0
21	2 years.	5 years.	18 yrs.	2 yrs.	Poor.	Fair.	Good.	Good.	Good.
22	2½ yrs.	7 years.	13 yrs.	1 yr.	0	0	Fair.	0	0
23	3 years.	4 years.	13 yrs.	0	Poor.	0	Good.	Good.	....
24	6 years.	5 years.	16 yrs.	1 yr.	Good.	Good.	V'ry good.	Good.	Good.
25	Congen.	1 year.	10 yrs.	0	Poor.	Fair.	V'ry good.	Good.	Good.
26	6½ yrs.	4 years.	15 yrs.	4 yrs.	Good.	Good.	V'ry good.	Good.	Good.
27	Congen.	2 years.	16 yrs.	0	0	0	0	0	0
28	3½ yrs.	3 years.	10 yrs.	1 yr.	0	0	Fair.	0	0
29	4 5-6 yrs.	1 year.	8 yrs.	0	0	0	V'ry poor.	0	0
30	3 years.	4½ yrs.	11 yrs.	1 yr.	....	....	Good.	....	....
31	Congen.	1 year.	8 yrs.	0	0	0	V'ry good.	0	0
32	3 years.	2 years.	9 yrs.	0	Poor.	Poor.	V'ry good.	Fair.	Fair.

It will be seen by a glance at the foregoing table that eight of those on the list are marked *very good* in mental capacity, as shown by their progress here. Of these eight, three entered the Deaf-Mute College at Washington after graduating at the American Asylum; two graduated with credit; two were obliged to leave school to go to work, and one is still in school, maintaining a very high standing in scholarship.

Of the eight marked as *fair* in capacity, I do not think there is one who will not be able to earn a comfortable support, and to communicate with comparative ease with those about him.

That even those marked *poor* in capacity are far from being idiots, the following specimens of their unaided productions will show.

[The following translation from signs was written by the pupil marked No. 17 in the foregoing table, after nine years of instruction under the combined system.]

"One day a boy was playing near a barn yard. A calf was standing on the ground near a fence. He saw it. He pulled some grass and then gave it them to eat. The boy wanted to ride on the calf's back. He coaxed it to the fence. He jumped over the fence, and jumped on the calf's back. The calf was frightened. Many stones lay on the ground. The calf threw the boy away. The large stone struck his head. The blood ran over his face. He began to cry and scream. The lady heard him. She came to the fence. His mother heard the boy. She came to the fence. The lady and his mother carried him into the house. The boy was very weak and sick. They lay him on his bed. His mother washed his face. She was very kind to him. She gave him nice milk to drink. The boy was sorry that he ever had been to ride on the calf's back."

[The following is a translation from signs written by the pupil marked No. 29, in the foregoing table, after eight years of instruction under the combined system.]

"Some years ago A merchant lived in England, he owned a dog A gentleman called him, the dog opened his mouth. The gentleman gave one penny, he ran to Baker. The merchant gave cake to him, he run to the gentleman, he put his hand into his pocket, he took it out of her pocket, he ran to the Bakery, the merchant looked at the bad penny, his head shook, he ran to the gentleman's house, he scratched the door, the gentleman heard the dog a noise, he called the servant, he opened the door, he showed the bad penny to him, the dog put the penny on the doorsteps, he ran away, he ran to the Bakery, the gentleman found it, he went to the Bakery, he put it into the drawer, he saw the dog, the merchant and the gentleman laughed at him, he went to the Bakery, he bought two candy, he thought that he ate two candy."

We do not claim success in all cases equal to that shown in the foregoing quotations and letters. It would be folly for us to do so, since the secret of supplying mental capacity, where nature has left a deficiency, has not yet been revealed to us. We *do* claim, however, that these cases, together with the facts given in the table following them, show very plainly three things, viz.: First, That the mental development even of pupils who succeed in acquiring fair articulation and lip-reading is much more rapid in many, yes nearly all, cases under the combined method than under the oral method. Secondly, That many, who utterly fail of progress under the oral method, may reach a fair degree of mental development through the manual method. Thirdly, It is very conclusively shown by the above quoted productions of pupils who have been tried under both systems of instruction, that the sign language is not responsible for the inaccuracies in the language of deaf-mutes and the peculiarities of language, commonly styled deaf-mutisms. They are to be attributed only to a want of familiarity with the proper forms of written language. Moreover, we assert (would there was some process by which we could give samples of articulation on paper!) that the pupils who have come from the oral schools to us, even the cases of marked success in articulation and lip-reading, show no better results in those branches than articulating pupils who have received all their instruction by the combined method *for the same length of time.* Not for a moment would we argue that there should be no schools of pure oralism. That is an excellent method for some of the semi-deaf and of the semi-mute. The success in *some* such cases is sufficient to more than compensate for any loss there may be in general mental development. In some such cases I have urged parents to send their children to a school using the pure oral method.

But we believe that many pupils, who plod along in the oral schools with very indifferent success to the end of the course, dwarfed in mind and disheartened, by a different method might have their mental powers stimulated and strengthened, and might as a consequence gain better results than they now do, even in the special branches of articulation and lip-reading. We believe that a majority of the pupils taught by the pure oral method would be better fitted to go forth to the duties of life, would come much nearer than they now do to being "restored to society," had they been taught by the combined method. Surely, the difficulties in the path of every deaf-mute are very great, and any degree of success, even when every possible advantage is afforded him, deserves praise, but to take away his most natural, most efficient aid and then attribute to the stupidity of the child the failure which fairly may be laid at the door of the method employed in his instruction, is certainly very unjust, and seems to those who understand his mental difficulties and peculiarities heartless, if not inhuman. Idiots there are among the deaf as well as among the hearing, but we have yet to learn that the proportion is any greater in the one case than in the other.

Not all with perfect hearing can learn music. Not all good language scholars can become proficient in mathematics. Not all can succeed as mechanics. Genius does not always run to art. Why should it be thought strange that not all the deaf can succeed in acquiring articulation and lip-reading?

Let the work be prosecuted with a large-hearted, Christian philanthropy, remembering that the sole motive in it should be the advancement of our pupils—advancement both mental and moral—the advancement of the weak not less than that of the strong. The teacher's ease, or pride in brilliant results, or impatience at the plodding pace of the very dull, should never shut out from school a single deaf-mute, who can there be helped to a higher plane of life. Let us be broad enough to own that our method of instruction may not be the best method for all the deaf, and when it becomes apparent that any pupil will probably receive more development by another method, let us be generous enough to give it the advantage of that method.

Miss Fuller—Mr. President, will you allow me to state that no deaf child has ever been refused admittance to the Boston School, neither has any child been sent away in consequence of mental deficiency. I would also like to state that we think every means which is used in the other institutions, or the other schools for the deaf, with the exception of the manual alphabet and conventional signs are used in our school for the development of the minds of our children. Written language is taught as carefully as possible to do without those means.

Prof. Bell—Mr. Chairman, I have listened with very great interest to Mr. Williams' paper. We must all abide by experience; whatever our ideas or theories may be, results are what we are looking at. I wish that every institution in the country could tabulate and prepare results such as these.

As I look around, and from the point of view of an outsider, I think I can see in all your methods of instruction good points as well as bad points. If we look at the condition of the deaf child and consider what deafness means to him we shall see that deafness involves three deprivations, the loss of speech, the loss of mental development, and the loss of written language. And I think I see in all our methods of instruction *one* of these three requisites made most prominent; I think we should have them *all* in view. In regard to the mental development, undoubtedly nothing could reach the mind of a child like the language of signs; for written language, undoubtedly nothing will give a child the knowledge of written language like using written language and using a manual alphabet and spelling with it. For articulation and speech-reading, undoubtedly nothing will develop the vocal organs like using them; nothing will develop the power of speech-reading like leaving the pupil dependent upon the mouth for information. It must be used. Now, when we come to look at the conditions, I think we should have in view the sum total — the whole.

A child who becomes deaf at five or six years of age, his mental development is the same as that of other children. He speaks, he may or may not be able to read or write, but that is very easily acquired in such a child. He speaks, he thinks in written English; for such a child there can be I think among all our superintendents here no differnce of opinion, that for such a child the pure oral method is what is wanted. His mind is developed, he can speak, he has the knowledge of language that is requisite to enable him to read the speech of others. As I am shown in a paper recently published, the power of speech depends upon a vernacular knowledge of the language. A child who has not a knowledge of the language is not properly fitted to read conversational speech. It is the context that tells the difference between ambiguous words, and, of course, a child is incompetent to decide that without the knowledge of language. Children who become deaf at five or six years of age are competent; they should be taught by the pure oral system. In our combined institutions there are many such pupils who are themselves placed under deaf teachers. What chance is there for the cultivation of articulation and speech-reading then? They may have articulation lessons for an hour or two a day or two or three hours a week, but that is not sufficient to keep up their speech. There is injury done in combined schools, too; you are making deaf-mutes by putting children who speak under a deaf teacher.

Now, we come to the other class, those who have no knowledge of speech. I believe that with such children we want the English language in a visible form in order that they may acquire the vernacular knowledge of language that is necessary to enable them to read the speech of others. I think with all such children that the language of the school room should be written language. I would advocate in all our schools in the early stages of the education of the congenitally deaf reliance upon written language; I would advocate the use of a manual alphabet. I see no harm to result in the use of a manual alphabet, if it is not mixed. If you teach a language, you must teach it by itself. If you translate from one form into another, that which is most familiar to you will be the one which you will use by habit. If at some portion of the day the congenitally deaf children of our oral schools should be communicated with entirely by writing and a manual alphabet, we shall have them acquire a knowledge of written English. I think in oral schools too little attention is paid to communication by written English and ordinary writing. I think that in combined schools too little attention is paid to articulation. You undervalue articulation and what it means to a deaf child. On the other hand, perhaps the oral teachers overvalue it and undervalue the necessity of the use of written language.

I have listened, as I said, with very great interest to Mr. Williams' paper, and while we must remember that the cases that Mr. Williams has brought forward are individual cases, it is not safe for us to generalize from such cases and say because thirty-two cases are as he has said, that therefore all pupils taught by the oral system have an inferior knowledge of written English. I have no doubt that many of our oral friends who are present could prepare such a table as Mr. Williams has presented which would prove the other way—which would prove that pupils taught by the sign language have an inferior knowledge of written English.

MR. WILLIAMS—Let them try the same pupils.

PROF. BELL—I would say to all institutions, work up that plan. If we cannot produce at our oral schools as much knowledge in written English as you can do, why we will combine.

I was struck by a remark made by Miss Fuller. It is a point that I do not think teachers of the combined system as a rule appreciate; that is, that in the oral schools, so far as the knowledge of English is concerned, the pupils have everything that pupils in the combined schools have. They have a knowledge of written English, they have a knowledge of spoken English. In the combined system you have a knowledge of written English and a knowledge of signs; in the oral schools you have a knowledge of written English and a knowledge of speech.

DR. E. M. GALLAUDET—And some natural signs.

PROF. BELL—Well, natural signs; I mean there is no artificial language. Now, the language of signs, however useful for the development of mind, is of no value in communication with hearing persons, and actually repels the deaf-mutes from hearing persons and causes them to come together and separates them from the world. If oral schools would only adopt a manual alphabet. I would urge them to do it for the congenitally deaf, especially in the earlier periods, using speech for the later periods; if they would only do that, we would have everything that is of value in communicating with the world and nothing that would tend to bring deaf-mutes together and separate them from society. I would urge upon all teachers of the deaf and dumb to get facts and results and tabulate them so that we might not have simply thirty-two cases, but that we may have thousands of cases, and then we can generalize and be guided in our efforts by these results.

MR. WILLIAMS—I hope I was not misunderstood in saying that any of these pupils on this list were dismissed from the articulation class as idiots. I did not mean to say any such thing as that, and did not mean to be understood in any such way. I said, I think, distinctly, and if you see the rest of the table you will find, for instance, that one that has been in the articulating school four years entered a class of four years with us; there was another pupil that had been in the articulating class seven years that entered a class with us of four years' standing. One that had been eight years in the oral school entered a class of five years' standing. Well, that indicates very far from a perfect failure, and what I did say was that there were pupils that were dismissed from some of these schools where signs were excluded, and sent home as incompetent to learn, who were afterwards sent to our school and proved far from being idiots; but I also said that in almost every case the mental development that they had acquired was far less than that of those who had been under instructions by the combined system for the same length of time.

Now, as to the point Prof. Bell makes that articulation is use of language, I know that; I don't dispute that point at all, and I state distinctly that to all those who had acquired language and who had quick perception, that that might be the best method of instruction. I know that there are many examples of brilliant success among these pupils in articulating schools, and it is better for them to be instructed, but I say, taking those that are of average ability and of less than average ability, taking those of average ability, I believe that a very large majority of them would be able to acquire about as much articulation and lip reading under the combined method as they would be able to acquire under the oral method, because of the mental quickening that they get through the use of the manual method. The short time that they use in articulation and lip-reading is made a better use of, and they make faster progress for the proportion of time that they employ. Then, taking those below that grade, I think that it is incontestible that where they get very little of articulation and very little of lip-reading (as many of those do) that the comparison between the mental development in the two cases is—well, it is hard to compare—the difference is very, very great.

THE PRESIDENT—The time assigned to this subject is up, and if you wish to continue this discussion the Convention will have to take some order with regard to it.

DR. GILLETT—Mr. Chairman, I would like to hear Miss Fuller. I saw that she arose.

On motion, the time was extended to enable Miss Fuller to address the Conference.

MISS FULLER—Mr. Williams' remarks remind me of one point, and that was the characterization of some of our children as idiots. I don't think that we have ever used the term in speaking of our children, and I should be very sorry to give the impression that we do speak of them as such. I am sure we have always been very careful not to allow our children to feel that we regard them as of a low order of intellect.

Another point was this, that I felt, in justice to our school, I should say that whenever a child is brought to the school for admission I always speak of the other institutions, and explain to them that the Hartford Asylum for the Deaf is open for their admission, and that the Clarke Institute, at Northampton, is also open. Then, too, we have a school at Beverly, which is supported by contributions; and I think I have never failed to speak of the Hartford Institution and the Clarke Institution. And it is for the parents to decide upon which school they will send their children; the admission of the children is entirely in their hands, and they may withdraw them at any time. We receive them on any day during the year, and they may take them away at their pleasure, so that there is no compulsion in regard to their remaining.

MR. CROUTER—Mr. President, I would like to state, in reply to a remark of Prof. Bell concerning the instruction of semi-mutes by deaf teachers in manual institutions, that it has been the practice of the institution in Philadelphia to place semi-mutes under the care and instruction of hearing teachers, and, in addition to that, we have during the past year oral classes, taught as nearly as possible after the oral method; and I must say that the results were very satisfactory, so much so that we purpose this fall establishing another oral class, in which the semi-mutes composing it shall be taught orally. This is carried on in the old institution at Broad and Pine in addition to the oral work in the oral branch at Eleventh and Clinton.

DR. GILLETT—Give us the result of the experiments your trustees have made in the school at Eleventh and Clinton. I think the Convention would be interested to hear that.

DR. E. M. GALLAUDET—Mr. President, I move that ten minutes more be allowed to continue this discussion, and that then it shall end and we shall hear Prof. Bell's paper upon statistics with regard to the deaf and dumb.

The motion was carried, whereupon Mr. Crouter continued his remarks as follows:

MR. CROUTER—At the close of the usual spring examination in the manual school, in Philadelphia, I was requested by the board to conduct a formal examination at the oral school at Eleventh and Clinton, under charge, at that time, of Miss Garrett. I conducted that examination with the single view of discovering to what extent the children were able to articulate, to read my lips, also to read the lips of others of the examining committee, and to what extent they were capable of using language. I think that I made the examination a very simple one. I endeavored to bring out, first, their ability to make themselves understood. It must be remembered that that school is a young school, that it has only been in operation about three years; I wish that to be borne in mind, and I do not wish to be understood, either, as claiming that the results that we found there were entirely owing to the method in use, because I believe that better results *are* obtained in other oral schools.

There are seventy-five pupils in the school, instructed by nine teachers. I found that so far as their articulation was concerned very few of the congenital cases were able to articulate with sufficient clearness to make themselves understood, either by myself or by the members of the examining committee appointed by the board. In lip-reading, while they were of course able to understand their teachers better than myself, there progress was not, as I thought, satisfactory. In language I found them quite deficient, surprisingly so. They were not able to express in language the simplest actions; they wholly failed to write a very simple story. I gave them the story by speech. I spoke, addressing them. To the most advanced class I gave a very simple story, such as pupils admitted into the parent institution last September would have written without any difficulty. I repeated it to them twice very slowly. I gave their teacher the privilege of reading it again, which was declined, and they failed wholly to produce the story.

In arithmetic they were, I thought, very backward. They were able to reproduce what they had done over and over again, but when I attempted to discover whether they were capable of applying the rules which they had learned, in any original work, they failed quite signally, so much so that on the morning of the day following the examination of that class, the teacher requested permission for her class to be allowed to solve the simple problem over again. She was allowed the privilege of explaining, pretty fully, the simple question to her class. She did it orally, and they again failed to solve it. It was a very simple problem, involving the first three rules in arithmetic.

They were not able to do anything in geography.

In the lower classes I found a very remarkable absence of knowledge or ability in the use of language. I refer to that class in which that boy was of whom I spoke yesterday. We tried repeatedly in that class to get the boys, and the girls, too, to exhibit what knowledge they had of language, and what ability they possessed to describe actions.

MR. WILLIAMS — How long had they been there?

MR. CROUTER — They had been at school two years. One of the gentlemen belonging to the committee, after trying repeatedly, in a very simple way, to draw out what they could do, turned to me and asked if I thought they would be able to understand signs. I replied that I thought they would, but I did not think that a very proper place to introduce signs. The committee at once wished me to attempt to communicate with this class in signs. I did so, and they found at once that they were capable of understanding ideas expressed in that way. And that boy endeavored, as I stated yesterday, to express a very simple idea in language, but failed. He failed to do it orally, and then drew a picture of the idea on the slate, which showed that he did not lack in mental capacity, but simply that he had not been taught to use language, had not been taught to articulate sufficiently to express the idea orally.

The examination upon the whole was a very unsatisfactory one, so much so that it has resulted in a change in the management of the school, which will hereafter be under the charge of anothr teacher.

Mr. Dobyns — I would like to ask one question: Did those classes usually recite orally in such studies as geography, history and such things?

Mr. Crouter — Yes, sir; they recited orally, and it was claimed that they also wrote.

Dr. Gillett — I want to say, in answer to Prof. Bell, that he never was more enthusiastic, or sincere, or earnest, or persistent in his endeavors to do the utmost to teach dumb persons to speak and to bring for the benefit all that could be found in America or Europe than I have, and I will go as far to do anything in their behalf as he will or as any other man will, to produce the very best results that it is possible. I have spent $25,000 in trying to find out exactly what the truth is on this very point we are discussing this morning; I have put sixteen years into it,— I was denounced as a heretic when I began it, and I laid the life of one of the noblest women that God ever made on this altar. Now, sir, a great deal is involved in this question. There never were more sincere men, or more true men, or more determined men to do the very best that was possible for those who, in the order of Providence, have been unfortunate, than have been the men who laid the foundation in this country of the instruction of the deaf; but I think, sir, that there has been, in the history of the education of these people, one fact that is somewhat unfortunate. And yet it could not have been otherwise. In the middle of the last century, De l'Epee, in France, began the instruction of the deaf upon a method we choose to term as the sign method; about the same time, in Germany, Heinicke began the method of the instruction of the deaf by what we term the method of articulation; not very far from that time, in England, Braidwood began his operations by the articulating method. Now, we all know, Mr. Chairman, how much the Frenchman and the German love each other. And we all know how much the Frenchman and the German together love John Bull. And unconsciously, I think these men — who were sincere men, who were honest men — carried their national animosities into this great, this good and this benevolent work; and during the last hundred years of the history of the instruction of the deaf and dumb throughout the world there has been more or less of this animosity that belongs to the people and does not belong to the work of instructing the deaf. I believe that both parties are endeavoring to attain the same end, and we ought to march hand in hand, shoulder to shoulder and heart to heart. And I have nothing to-day that I would not give up and gladly give up if somebody will show me something better. But I must remember, Mr. Chairman, that I cannot be satisfied with the articulation of my pupils, if simply I and a few friends understand it. That is good so far as it goes, but I want something that will carry them still further.

Now, I have gone to forty institutions of the deaf and dumb in this country and in Europe, and I enter into school rooms where the articulations between the teacher and the pupil seem to be very clear, and they seem to understand one another very readily, but it is very difficult for me to understand them, being a stranger, and difficult for me to make them understand myself. Now, I am reaching out for something better than we have yet attained, and I was most enthusiastically delighted a few weeks ago in New York when my respected friend here, Mr. Greenberger, announced, "We are now to have an American method of teaching the deaf articulation." I think we need something better than Germany has given us, we need something better than England has given us, and I shall be glad if America brings it forward.

Now, I said I would not talk long, and I must desist. I want to go from this place feeling that we have all been made better and stronger here this morning. As Mr. Bell so well and happily says, we have got to staud in the face of facts. My comrades, facts are God's arguments, and there is no disputing what God in us is. He reasons to us in nature by the hard facts that are in the rocks of the earth, and by that great brilliant, glowing light that sparkles over our head by night and enlightens us by day; and when we come up to the face of facts, Mr. Chairman, we have got to recognize that we look in the face of God and hear the voice of God speaking to us; and there is no way of getting away from these facts.

Now, then, there are some points that I am not entirely satisfied upon, in the elucidation of the paper of Mr. Williams. I was interested in it, but there are some points I would like to understand better than he was able to develop, in the paper that he brought out this morning. Take, for instance, the case of the pupils who wrote compositions on the "Old Woman with the Apples." Now, I would like to know (I have an idea about it), I would like to know certainly whether the lad came from the school which I suppose is the institution that Mr. Stainer, from England, said was the best he had ever seen, and that Dr. Bates, of Philadelphia, stated in New York, (after he had visited the institutions in Europe and the institutions in America,) was the best he had ever seen, was the one from which I suppose these pupils were brought; evidently the lad who was brought from this school, and had this picture traced before him, had no exercise on that picture before. Now, had the other pupils ever had any exercise on that picture before?

Mr. Williams—No, sir; they had never seen it before.

Dr. Gillett—Well, you did not elucidate that.

Mr. Williams—I beg your pardon, I think I stated that in the paper.

Dr. Gillett—I didn't so understand it. Perhaps it is due to an aching head that I did not understand it.

Mr. Williams—None of them had ever seen the picture before.

Dr. Gillett—Then, I should like to know further, whether those other pupils had been drilled in exercises very similar to that. Had they ever had any drill in that particular direction?

Mr. Williams—No; I don't think they had had any more, and perhaps not as much drill as he had had.

Dr. Gillett—Then take the case of the boy who wrote a letter concerning the visit of the bear; where the letter he had written six months after coming there was contrasted with the letter he wrote when he first came,—had he had any school exercises on the visit of that bear before he began to write that letter?

MR. WILLIAMS—No, sir.

DR. GILLETT—I want to repeat here what I said yesterday, that the deaf-mute has no language but gestures. I know my brother (Prof. Bell) shakes his head; but the language of your fingers is a gesture language, the language of the arm is a gesture language, and the language of the eye is a gesture language, and the language of the lips, so far as the deaf person is concerned, is a gesture language. I am not intending to say that that is the best, but it is a gesture language still. There is articulating speech for those who have hearing, but that which makes speech articulate to us who hear is absent in those who do not hear, and gesture is a movement made to express thought or feeling, and, so far as the deaf person is concerned, the motion of the lips is but a gesture to express thought or feeling, and is as really and as truly a gesture as that that is made by any other portion of the physical person or all of the physical person. Now, the question—

THE PRESIDENT—The time is up.

MISS FULLER—May I ask Mr. Williams a question? I am afraid that the best institution in the country will suffer unless I acknowledge that boy. I think he belongs to me. We claim to do the best work we are capable of doing.

MR. WILLIAMS—I very gladly refrain from stating where any of these pupils came from.

THE PRESIDENT—Excuse me, but I must ask the Convention to allow this, if it is allowed at all.

PROF. BELL—I think, Mr. Chairman, it is of importance that we should get all the light we can upon an important fact.

DR. E. M. GALLAUDET—I have a speech about an hour and a half long bubbling right over.

DR GALLAUDET—Time is up.

MR. GREENBERGER—I have a few remarks in my brain that render me very uncomfortable. I would like to relieve myself.

THE PRESIDENT—Mr. Greenberger has done nobly, he may come and smell of this beautiful bouquet.

The President then announced that the next order of business was a paper by Prof. A. G. Bell, of Washington, upon statistics concerning the deaf and dumb, in which a possibility of a deaf variety in the human race would be discussed. Prof. Bell prefaced his paper by the following extemporaneous remarks:

Mr. Chairman and Ladies and Gentlemen—I think we all recognize that we have to be guided by facts; and it has been a matter of earnest thought for me, during the past few years, to ascertain what are the results of instruction of the deaf-mute by the combined method, the manual method and the articulate method. Do they mix with society? Do they read books? Do they gain a livelihood? Do they earn their livelihood by the trades that have been taught them in school? All these are important questions. We cannot get an answer to them from any publication I have seen. Do they marry deaf-mutes? Whom do they marry? Are we increasing the number of deaf children? All these questions are of importance in connection with educational matters.

I have thought it would be of interest to this Convention if I were to give you the few results that I have been able to obtain concerning the results of the marrying of the deaf. A few months ago I read a paper upon the "Formation of a Deaf Variety of the Human Race before the National Academy of Sciences," which paper was thought to be of sufficient importance to be published by Congress. It is now in the printer's hands. It has not yet been published. I had hoped to have had a copy of the proof here to-day, but the government printer is slow. I have the greater portion of the paper here, in which I give the statistics that I have collected, and, with your permission, I will read the portion that I have. This is the paper presented to the National Academy of Sciences.

Rrof. Bell then proceeded with the reading of his paper.

Pending the reading of the paper, the Cenference took a recess until 2:30 p. m., at which time Prof. Bell continued the reading of his paper.

Dr. Peet—Mr. President, I suppose I ought not to occupy any time upon this subject, but I would like to derive one practical idea from the paper we have just heard read. We have great influence with our pupils; after they leave us they come back to the institution and they look up to the principal of the institution and their teacher with profound respect, and they often ask their advice in regard to many matters of life. Now, what is our duty in this respect? Shall we discourage them from marrying each other or not? If the teachers of the deaf and dumb institutions think that the result of deaf-mute marriages has furnished us an increased number of deaf mutes and is going to increase the number largely, I maintain that it is our duty to discourage marriages among them. On the contrary, it appears our habit has been rather to encourage it. When we have found a nice eligible young man and a suitable companion for him, we would rather encourage than discourage. It is a momentous responsibility, and it is to be met not simply by separating the deaf and dumb and having them not meet each other, but it has been done largely by the influence of their teachers and principals. I should like to have some expression from the members of the Conference as to what our duty in this matter should be.

DR. GILLETT—Mr. Chairman, I would like to call attention to the fact that Dr. Peet and Prof. Bell advocated this idea after they got their own wives.

MR. HAMMOND—Mr. President, I suppose this would be a matter more easily to be settled after more data are gathered. The distinguished gentleman who has addressed us, has given us to understand that the statistics were, so far, somewhat inaccurate and unreliable, and that he was not satisfied with the result obtained, and I think that it will be time enough for us to understand our duty in that regard when we have got our data down to a little finer point.

PROF. BELL—That is just the reason I have brought this paper before you to-day. The collection of these data depends upon you. You have the data, but not in published form, in your institutions. Let these data be published and let us examine this question fully, and then we can decide better what to do. I don't think that anyone can interfere and dictate to a man as to whom he shall or shall not marry. The correction will lie in reaching the source of the evil. If we can prevent, by our method of education—if we can make deaf children mingle with hearing persons and have many more friends among the hearing persons than they have among the deaf, the chances are very greatly in favor of their marrying hearing persons rather than deaf persons, if they marry at all.

DR. GILLETT—Do not some of your statistics show that marrying of hearing persons increases the number of the deaf?

PROF. BELL—Yes, in the American Asylum statistics; there we find that many hearing persons themselves belonged to families containing deaf-mutes. In the New York Institution it comes out the other way. There is no reason in the world why marriage with a hearing person, or marriage with a non-congenital deaf-mute, who has not got deaf relatives, should be productive of any larger proportion of deaf persons.

THE PRESIDENT—The last topic for the forenoon is one by

Dr. Isaac Peet, upon the importance of using symbols in teaching grammar.

DR. PEET—The subject of my remarks this afternoon is the value of symbols in the teaching of grammar. I regard symbols as of the greatest value in all instruction. A symbol formulates or tells something.

Mr. Bell's symbols of visible speech give to the eye the exact position which the organs of speech take in pronouncing certain phonetic elements. There is a whole sentence in every symbol. So symbols in chemistry give a language by which we can formulate a great many propositions in a very short space, and with exceeding ease, so that it is recognized at once by the eye. The symbols of algebra are of the greatest importance, as are all the symbols of mathematics. The language of symbolism is one of the most powerful aids in education of all kinds, and you take this and apply it to the principles of a language which the pupil does not understand, and you express to his eye all the principles which are involved in the construction of that language; so that, in order to teach grammar to the deaf and dumb, before they have acquired that knowledge of grammar which will enable them to express their thoughts and be able to receive instruction in it, we must have resort to some simple method of expression which shall convey to them a clear idea. Hence, the importance of symbolism in grammar. This fact cannot be understood without illustration. I might go on and talk, in general terms, upon the value of symbols, and at the same time, if their application were not understood, I should be talking about something which no one could properly understand; my words would be mere words, they would convey no accurate impression. So that, with your permission, I will give an illustration of these symbols, to show how very easily they are done by both teacher and pupil,—how very simple is their application, and at the same time, how very perfect.

[Certain characters and sentences were here introduced, to show the force of combinations of words in phrases illustrating verbs, and the symbol of an adverbial phrase and different parts of speech. The force of the relative pronoun, in modifying nouns, and by its power forming an adjective clause was also illustrated by means of symbols.]

It makes the whole subject of grammar perfectly easy to the mind. In this way, by means of symbols, we can teach grammar so that it will be divested of all mysteries, and the deaf-mute will be able to express his idea formally and correctly. I have a chart at home of some eight sentences which shows the different predicates of the English language, and every sentence must be conformed to one of those.

Now, I will simply state, Mr. President, in conclusion, that for my own necessities I am writing out a series of lessons, which will come out in book form, which will give a complete analysis of the English language in connection with this system of symbols, and that if my brethren in the profession shall encourage me enough to enable me to procure the type necessary for these symbols, there will be no delay about publication. The lessons will be taught in manuscript at the New York Institution, but I shall be very glad to share the result of my labors with all my brethren.

MR. CROUTER — I would like to inquire the period at which you introduce these symbols.

DR. PEET — I introduce them, sir, the very first day the pupil enters the institution.

THE PRESIDENT — The next topic before us is clay modeling, by Prof. Spring; we will now listen to his remraks.

PROF. SPRING — Just at the present juncture there are strong arguments for deaf-mutes to be taught clay modeling, as a wise accomplishment and as a practical pursuit. A rapid growth of interest has taken place in this whole subject in all its branches. This growth, as far as the public is concerned, dates from the Centennial in Philadelphia, but with the thinkers and workers who enabled the Centennial to show what it did, we must go a few years back of it.

In 1875 all the teachers of what is now the Horace Mann School in Boston took a course of lessons in modeling, and several of the pupils were invited to the same class room and made a beginning with clay. Their enthusiasm was unbounded, but the crowded curriculum and other such reasons hindered its prosecution. Enough had been tried, however, to convince those acquainted with the facts, that, with wise adjustment to present methods of study, clay modeling would be a most valuable help. Miss Sarah Fuller wrote, only a few months ago, that she wished it could be introduced into all the schools in the country.

At last this introduction of clay work into the public schools is being accomplished. In Philadelphia, in Boston, in St. Louis, in many smaller cities, the work has been given experimental tests, and I have yet to hear of a case of retreat from the position once taken. Teachers are rapidly finding that the fire of enthusiasm which the children show in being allowed to use the plastic material renders them themselves plastic—and in fact it furnishes desired conditions for vital educational results. There has been too much of the cold-hammering process in education. Many other conditions will doubtless arouse this same degree of vitality; as, when Toepfer took his school on their voyage, and he gave "*voyages en zig-zag*" in the Alps, or when Theo. Weld opened and closed his Englewood school to suit the changes of the tide, so as to secure the best time for a swim in the bay.

But clay modeling, as it can now be taught, has the advantage of bringing nature in its deepest and broadest aspects into the school room and within arms' length of each scholar. No longer merely the trade secret of the potter, or what only those "born with a genius for sculpture" can prosecute, this wonderful material can be employed by an observing and progressive teacher to illustrate almost every subject of human interest.

The universal diffusion of clay, in its different forms and uses, brings an acquaintance with it into our daily lives; and it is becoming practically impossible to find a home of culture anywhere in which you will not find in every room samples of ornamental modeling in clay; and as to the industrial uses of clay, there is hardly a case where artificial heat or light are used either directly or in order to prepare something else, where you will not find clay also. The kitchen and the parlor stove have their fire-brick lining; the gas of our cities is made in clay retorts; the new process flour goes through porcelain rollers, and when cooked is eaten upon china plates; and the boy turns clay door knobs, goes out of the brick house with terra cotta decorations to play with his clay samples, while his sister stays in and sets out her toy tea-set for her porcelain headed doll.

A MEMBER—Have you in your experience found that this is a trade or an art (if you may call it such), in which young men or young women can find occupation?

PROF. SPRING—I think the time is coming when there will be a great demand for clay modelers—indeed it has already come. Good clay modelers can secure good pay. I noticed in the paper the other day that under a sweeping reduction of all salaries of government employes at Washington, there were six modelers who were modeling for the government whose compensation had been reduced from $5 to $4 a day. That will give you an idea of about what modelers get.

A MEMBER—Five dollars a day before?

PROF. SPRING — Yes, they had been getting five dollars; they are now getting four. Probably outside of the government employment they would have been getting five dollars.

MR. GREENBERGER — Are there not modelers in clay employed in making those centre-pieces for the ceilings of rooms, etc.?

PROF. SPRING — Yes; our houses in this country are generally very destitute of these things, but in Europe —

MR. GREENBERGER — In the East they are not desitute, are they?

PROF. SPRING — Well, they have moulding generally. In Europe there is a large demand for modeling work, in the doors and the centre-pieces and the mantel-pieces — outside and inside, all over — there is modeling work; and all the dishes and ornaments about the place.

MR. GREENBERGER — In New York I have seen parties engaged in that work regularly employed on weekly salaries.

PROF. NOYES — What kind of clay do you use?

PROF. SPRING — Simply dirt dug out of a bank where I find it and moistened with water. I will not attempt to give you any information about the mere material — I might spend the time telling you about that, but I want to show you a little about the way I think it might be used in teaching language and such subjects.

PROF. NOYES — Can you give us an idea as to how much time it would take to give an ordinary person a fair insight into the matter?

PROF. SPRING — As an instance of how little time it takes to get the requisite degree of instruction, there was a young woman who took a brother's place in assisting me at Cautauqua in putting my class room in order. Her brother was laid up one day and she came in his place. As he had undertaken to do the work she thought he ought to provide a substitute and so she came. She was there one day and did so well that I said I would give her a lesson. I gave her a lesson in decorative modeling. She saw the lesson I gave to the class. The next year her brother came and wanted to buy thirty pounds of clay. "Why," I said, "I am glad you are going to take an interest in this matter; you didn't seem to take much last year. Am glad to see you getting some clay." "Well," he said in a funny sort of way, "it is for my sister; it is not for myself." "Well," I said, "I am sure she would do well, she seemed to take more interest than you did in it." He said, "Yes, she had been having a class in modeling all winter;" and pretty soon after that there were some people came in with their family and thanked me for being the means of having these children in the modeling class. They said the children had enjoyed it so much, and had made such progress in the modeling class. So there was an instance where a young woman took but one lesson, and that really a sort of informal lesson, and she set herself up in the business.

Dr. Gillett—About what would the average be?

Prof. Swing—Well, that would be better than the average. A regular course for the teachers is three lessons, of an hour each.

Prof. Spring then proceeded to give illustrations of clay modeling and the use of clay, relating several amusing stories.

A Member—May I ask whether you would prefer people should have a knowledge of drawing first?

Prof. Spring—I was asked the question in St. Louis lately, what was the relation between modeling and drawing, and I answered that I considered drawing and modeling as two feet, that I should prefer to have the modeling foot take the first step; so I consider drawing and modeling a language, and they belong together. These heads (referring to samples exhibited) in low relief are an advantage over drawing in several ways, and in effect, but a good drawing or a good piece of sculpture is a good piece of art. There is no advantage, when you get to a high grade of art, in one kind of art over another, as I understand it.

A Member—May I ask in which study a child can learn relatively the faster—make more headway—that is, show to the better advantage his talents?

Prof. Spring—In the first steps, a little child, for instance these three little children before me, would probaby make more progress than any of the rest of you in the room, if you had never touched modeling; but after awhile, the older minds would bring in the advantage of their other training. Children are very quick to take up modeling.

The professor then proceeded to illustrate a story about an elephant, and called upon a little child to relate her understanding of it, which she did to the satisfaction of all who observed the illustration. Professor Spring then continued his remarks saying that he had selected this as an instance of a story that could not be told by any real objects in the class room, because an elephant could not be brought into the class room. He described how the idea of a man climbing a mountain could be conveyed by means of clay, and concluded his remarks as follows:

My point is here, that while you can take an object and place it above or below, behind or in front, to the right or the left, and describe *toward* or *from*, and describe all of the prepositions by any object, you cannot express the verbs without something of this sort. Drawing, of course, is the great resort, and it is far more useful than modeling in some ways; you can represent landscapes and distances by drawings, but you cannot represent the human and animal actions except by means of this sort. And I think it is a very useful thing for the teacher of deaf-mutes, and of all teachers, to have the ability to represent actions in this way.

Now, as a matter of teaching arithmetic and geometry, or, I should say rather, in order of true deduction, geometry and arithmetic, — and I should say in order of geometry, the geometry of solids and superficies would be the true order, giving the solids first and then the surfaces. In this way you may teach a great deal. In teaching abstractions, there is great advantage in having things that you can give abstract ideas with clearly, rising to the abstraction through the material. There has been, for instance, a difficulty of some teachers in explaining the geometrical abstractions of the point, line and surface. Now, here is the way I should do that. Here is an object that the child knows is equally distant from the centre, all around each point of it; but to explain what the point is, a simple way might be to cut this ball in two, and in the middle of the ball there must be a place where the centre point will be. Now, between two points there is only one way which is nearest, and that is a way that lies in that channel; a line is the distance connecting these two points, and the nearest way between them is a direct line, and any other way would be further around; and the place at which that line would cross from one of those surfaces to the other would be where the surfaces are tangent to each other. You see you have a means of explaining the abstractions. No matter how rough this is, it is better to be rough, like diagrams on the blackboard, than to be accurate. Let each pupil do it himself. That is my way of using clay. The pupils feel that however roughly they make the ball, or however roughly they cut it in two, they could, by spending more time and taking more pains, get at the mechanical accuracy.

Then, if I have two balls cut in two, I can take three of those halves, one-half a ball cut in two showing the circle, two-halves showing the line. Now, I put three half balls together, and the space, if I fill up this little triangular space here, I can then draw three lines connecting those three central points and I have the inclosed circle. There I have the simplest first figure, the equilateral triangle; and any triangle is simply the space bounded by three lines. That explains the surface.

THE PRESIDENT—I suppose the time is up, Professor. The arrangement is to have another exercise.

PROF. SPRING—All right, sir, I am ready.

THE PRESIDENT—We have a paper prepared by Superintendent H. A. Turton, of Kansas, on "Home Life in an Institution for Deaf-Mutes," which will now be presented. It is not a lengthy paper, and I hope all will stay.

SUPERINTENDENT TURTON then presented the following paper:

HOME LIFE IN AN INSTITUTION FOR DEAF-MUTES.

"Home, Home, Sweet Home." How oft have the words of that dear old song thrilled the hearts of those of our number who enjoy the sense of hearing? The very mention of the sacred name, Home, is sufficient of itself to touch a tender cord in the sympathetic breast, and awaken feelings which no other word in the English language can arouse. No matter where our lot may be cast in distant lands o'er the sea, separated far, far from the loved ones of the family circle, our thoughts are borne on lightning's wings, and we find ourselves, in our imagination, drinking in the sweet comforts of the fireside and holding communion in spirit with those who are linked to us by the ties of kindred. "Yes, Home, Home, thou blessed place, dearer than all on earth to me."

There may be those present who may say to themselves as these thoughts are uttered, "Why remind us of those things with which we are all familar? Why should we, who have gathered here, from all over this beautiful land, coming hundreds of miles to consult with each other on the best methods of training the silent children of earth for the great battle of life, spend our time in listening to words on a subject so well known and appreciated by every human being, worthy of the name of man?"

The author of this paper has an object in view which, in his humble opinion, he believes has a direct bearing on one of the objects which has brought us together, viz., the discipline and domestic management of an institution for the deaf and dumb. It is a subject upon which he desires light, and while this paper will contain an embodiment of his own views, brought about by years of study upon this question, he hopes and trusts that the older heads will give him the benefit of their age and experience, that he may go back to his institution with a mind imbued with fresh ideas and a heart better prepared to carry out his design of making the institution over which he presides a Home indeed and in truth for the dear ones under his charge.

It is his opinion that too many of us are apt to forget, in providing for the wants and comforts of our own immediate blood, that there is a vast responsibility resting upon our shoulders to provide a home for those who for the time being are intrusted to our care.

There is no profession on earth whose duties and responsibilities can equal that of the officers and teachers of the deaf-mute. These children are placed under our care, say at the age of ten, and continued with us through the bright period of childhood until they arrive at the age of maturity. They are taken from a fond mother's arms and a loving father's caresses, separated from brother or sister, and given to us as precious wards to provide and care for during these years of transition from childhood to manhood or womanhood. Their minds come to us blanks, as it were, yet plastic to be moulded and trained by our hands and our efforts for the great unknown future that lies before them.

Now it is not the object of this paper to suggest any ideas concerning the intellectual development of these minds, for that great work will be sufficiently discussed at the proper time; but let us, if you please, glance for a few moments at our duties in respect to supplying for the time being the place of parents. Most of us are heads of families, and let us just now in our imagination exchange places with the patrons of our school. Let us consider how we would feel to have the child of our own bosom taken from our arms and placed in the hands of strangers, and by them kept for nine months out of every year through the entire period before spoken of. How our hearts would be wrung with anguish if we thought that child would be deprived of any comfort or any privilege which it would enjoy in the family circle of our own hearthstone and fireside.

Again, are we not at times apt to forget, in our mingling with the outside world, the enormity of the loss of this faculty, hearing? Do we realize to its full extent the meaning of that word DEAF, and do we do all in our power to compensate as far as possible for that loss? If we do, we will use every effort possible to make our several institutions happy homes for these dear children. Now, how shall we accomplish this work? In the first place, no person should ever be selected to fill the position of superintendent, matron or teacher, whose heart is not overflowing with kindness, love and affection for these children on account of their infirmity. There is no class of persons in this broad world of ours who are more susceptible to love and affection than the deaf-mute, and that superintendent, principal or matron who has gained the love of those under his charge has accomplished more than words can describe towards the successful discipline of his institution.

Certain hours in every day are set apart for the school room and the work shop. There are other hours in which the pupils are relieved from all compulsory labor; during these hours all cares should be thrown aside and each encouraged to vie with the other in promoting happiness. The old motto, "All work and no play makes Jack a dull boy," is fully as applicable to the deaf-mute as to his speaking and hearing compeer; they should therefore be allowed the same privileges at such times as they would be allowed were they with their own parents in Christian homes. They should be allowed the free exercise of their own tastes in the selection of their games, so long of course as they keep within the bounds of propriety. The buildings and grounds should be so arranged that there should be proper places for amusements. The pupils should be taught to feel that there is a time and a place for everything. The officers and teachers should feel that when a legislature makes an appropriation and magnificent buildings are erected, beautiful grounds laid out, with their drives and their walks, their conservatories and their fountains, that this money has all been expended for the deaf-mutes, to add to their comfort, their happiness, and to provide a home for them. It is feared that some of us occasionally forget these important matters and in our practice reverse the order and act upon the principle that it is the officers of an institution that should enjoy its comforts, instead of the children. This is a matter worthy of thought, and it is hoped all will consider it.

In order to fully carry out the idea of home life in an institution, no institution should become so large, so far as numbers are concerned, as to prevent the principal or superintendent from coming in personal contact with each and every pupil. He should have personal knowledge of the peculiarities and disposition of each one, and should make himself the confidant of each and every pupil without an exception. Confidence begets love, and where love holds sway happiness must reign. O what a consolation it is to the head of an institution as he moves around among these children to see the eye brighten, the countenance light up with joy and to have them flock around him with all the vivaciousness of happy nature and apply the endearing name of father or mother as the case may be.

This being true, then let each and every one of us throw our whole souls into this great work; let us lay aside those old ideas of severe discipline and the iron rod and unbend ourselves for the time being. Let us go among our children with our own faces lit up with smiles and our hearts open to the wants of these precious charges that are committed to our care.

In cases of discipline, where some rule has been violated or some order trampled upon, whatever reprimand or punishment is determined upon let it be done in private. Call the offender before you, or, if there be more than one, all who are guilty, and then and there make an appeal to the heart, and in ninety-nine cases out of a hundred you will accomplish the desired end, and the punishment determined on may be inflicted while you yourself will have a still firmer hold on the affections and the hearts of the parties involved. There have been a few instances during the past year where the author of this paper has been called upon to put this matter to a complete test. One instance in particular, where the nature of the offense was of a most aggravated character, the pupil was a young man of seventeen. He had been represented as having come from a home whose influences were only for evil, and his expulsion was urged by a number as being necessary for the good of the institution, but a different view was taken of the matter. He was brought into the superintendent's office, and there, in the most tender and solemn manner, was the nature of his offense laid before him. He was told what his future career would be unless he paused in his course. All this done in a way and manner that touched the heart of the offender. At first he was stubborn, unyielding and making a hero of himself for having been guilty of so flagrant an offense, but in a short time he began to melt, and before that talk was over that boy, who had been represented as being the most vicious boy in school and susceptible of no feeling whatever, actually fell upon his knees and shed tears of genuine contrition, and begged to be forgiven, but he was told that he must suffer the penalty for his disobedience, and sentence was accordingly pronounced; and when a week afterwards he was released from his punishment he voluntarily took the superintendent by the hand and there prommised never again to be guilty of any open bad conduct, and that boy kept his word for the remainder of the term, and after returning home his father wrote a letter of thanks to the superintendent and said his son was a better boy to-day than he had ever before been. Now, I hold that had that boy been expelled, as was desired by some, or even severely punished without the private admonitions he received, he would have gone on from bad to worse until disastrous ruin had been the result.

And now, in conclusion, let me say that we should all be thoroughly imbued with this idea of making our institutions as near as possible like the family circle, as was remarked yesterday by Father Dunne. These institutions are neither prisons nor reformatories, but wholly and entirely educational in their aims and objects, and when the pupils are released from the school room and the work shop it is then that we have the opportunity to shed upon them the sweet influences of home life. It is then we come in personal contact; it is then that we can unbend ourselves from the position of official dignity and mingle in the social circle with our loved ones. If anyone have joys, partake of their happiness. If any of them have grief or sorrow, share also in those, and by so doing lessen the ills their lives are heirs to. Throw entirely aside that stern, old-time regimen that is merely a discipline upon the surface while underneath is the volcano of insubordination ready to burst forth at any moment; that discipline which curbs the joyous nature of childhood and makes its life a burden rather than a pleasure, and substitute therefore the happy influence of home surroundings. We are thankful to-day that the general sentiment of our noble profession is for this line of policy, and that to-day our institutions are being so carried on that the children who spend the summer vacation with their kith and kin welcome the return of their school days with hearts full of joy and pleasure at the idea that they are returning to their real home.

A father loves to gather his children around him, the little ones on his knee and the older ones circled about, to tell sweet stories, mingle in their sports, listen to their joys and sorrows and make sunshine and gladness shine all about him. Just so should the head of an institution for deaf-mutes love to gather these dear ones about him, his heart in full sympathy with theirs, mingle in their sports, join in their social chats, and as their glad eyes sparkle and beam with delight, their innocent bosoms heave with the pulsations of love, feel that he is rewarded far above any other earthly mortal in thus carrying the great principles of our Saviour whose chief commandment when upon earth was: See that ye love one another — and then in that great day, when we are called upon to give an account of our stewardship, we will gladly obey the summons and receive the reward of the righteous; and as we enter that higher sphere and receive the crown of life we shall feel that the brightest jewels which sparkle in its diadem will be the fruits of our labors in smoothing the pathway of these loved ones from the rugged rocks and bristling thorns that would otherwise have proved to them insurmountable obstacles in life's journey.

At the conclusion of Mr. Turton's paper, the Conference adjourned until Saturday, July 12, at 9:30 A. M.

FOURTH DAY.

SATURDAY, JULY 12, 1884.

The morning session of the Conference opened at 9:30 o'clock, with Vice President Mathison in the chair. After prayer by Rev. Job Turner, the minutes of Friday's session were read and approved. Reports from committees on credentials and business were read and adopted.

The Secretary then announced that the following questions had been presented for discussion and consideration:

First — What plans should be recommended to boards of trustees and legislatures in providing increased accommodations for mutes, in the erection of new buildings?

Second — How far should deaf teachers be employed in our schools?

Third — Is it desirable to separate the sexes in the school room?

Fourth — How best can friction be avoided in arranging classes in articulation and in the sign process?

THE PRESIDENT — We are now open for miscellaneous business a short time.

MR. GREENBERGER — Mr. President, I would like to have the privilege of the floor for a few minutes to address the Conferece. I would request my friend Mr. Westervelt to act as my interpreter.

A certain passage in my last annual report, which Mr. Williams quoted in his paper yesterday, gave rise to misunderstandings among my fellow teachers and sorely wounded the feelings of the pupils and graduates of sign schools as a class. I have known this long ago, but some little incident has just occurred which makes it very desirable for me to have the privilege of offering an explanation before we part. The following has therefore been jotted down in great haste.

I can hardly find words to express my regret at the fact that I allowed my enthusiasm for the oral method to carry me so far as to use expressions which have given such great offense to the deaf-mutes and their friends. Nothing would be more gratifying to me than to be able to make amends for the injury which I may have done them. At the same time I must say that my assertions were not so sweeping as some have represented them to be. Any impartial reader of my report must see that it was my intention to make ample allowance for all those numerous cases of deaf-mutes who have shown to the world that deafness is *not* a barrier to greatness, and who have become noble men and women in spite of their want of the faculty of speech.

I further wish to say that if I have done injustice to the deaf, they must not retaliate in the same manner by thinking for one moment that this enthusiasm of mine, which is at the bottom of all this trouble, arises from any other motive than that of a desire to do good to them as a class and to alleviate their misfortune in a manner, which in my humble judgment is calculated more than any other, to fit them for a world into which nature has sent them in an incomplete and therefore unfortunate condition. No greater injustice could be done to me by anybody than to believe that the unfortunate remarks which I made in that report are the result of want of sympathy and love for the deaf-mutes. It is now twenty-three years since I commenced my labors in their behalf. During that time all my thoughts, all my energies and all my efforts have been directed towards the accomplishment of one object, namely, to give speech to the deaf and to make that speech as perfect as it possibly can be made under the circumstances. The path which I have followed has not always been covered with roses, and I can assure you that I should long ago have abandoned it in despair, if I had not been animated by a love for the poor unfortunate deaf, which knows no bound.

I do not see how we teachers can prevent that the blows which we strike at each other hit our pupils at the same time. If you say that the articulation of some of my pupils is imperfect and that their voices sound harsh and disagreeable to your ears, those pupils who have such voices will not feel complimented by your criticism. And if I want to criticise your work I cannot possibly avoid giving offense to your pupils. But the deaf-mutes must not forget that the sole aim and object of our controversies and disputes is to become able to do our work better in the future than we have done it in the past. No matter which system of instruction may be defeated in the struggle which is now going on, and no matter which of us may be victorious in the contest, in the end the deaf-mutes cannot be the losers by it. Looking upon the matter in this light, they can well afford to exercise patience and forbearance if some of the blows which are not particularly aimed at them strike them nevertheless.

So far as the deaf-mutes themselves are concerned, I am willing and anxious to humble myself to the greatest possible extent and to retract every word that I have ever said and that has given offense to them. But to the sign teachers who feel offended by the remarks in my report I will say that I do not mean to make them responsible for my blunders; nevertheless, I cannot resist the temptation of paying them the following passing compliment :

> "Let those — their woes deplore,
> Well do they merit all they have and more."

If they had not persisted in thrusting the prod into my flesh till I was driven to despair, such remarks would never have found their way into my report.

I desire to say one word further, Mr. President; I jotted down these remarks in a great hurry this morning and forgot one thing which I would not like to remain unsaid, namely, my duties as a principal and superintendent of the Institution for the Improved Instraction of Deaf-Mutes are very arduous; it is difficult enough to teach the deaf to speak, but if you consider that I have to take teachers who are entirely inexperienced, (who perhaps have never seen a deaf-mute in their lives), to train them to teach the deaf to speak, and to attend to all my other duties, you will understand that I am compelled to work very hard. I always try never to treat any duty lightly, no matter how small the matter is; I always consider it important enough, if it is to be done at all, to be done well. If I have neglected this principle in one thing, it certainly was in writing my report. I had always been of the opinion that that report was not read by more than very few people. I know that among my fifteen trustees there has never been more than one who has read it, and the highest number who have ever read the statistics in my report in any year was two, and I know there are eight hundred copies printed every year for the use of the legislature and that the report is placed on the desk of every legislator, but that it is never looked at and goes right into the waste basket. I know they do not read our reports, and knowing that fact, writing a report has always been a duty which I treated very lightly and never paid much attention to; and I was *very much* surprised, more so than I can tell you, when I found that so many of the members of this Conference had found nothing better to do and no more appropriate reading matter to interest them than my annual report.

THE PRESIDENT—I have no doubt Mr. Greenberger will be more careful in the future.

MR. GREENBERGER—Oh, yes; if you will keep up your interest in my reports I will try to do so.

THE PRESIDENT—I think I may say that we all forgive him.

DR. GILLETT—Mr. Chairman, I have known Mr. Greenberger since he first came to America and started his little school in Chicago (which the Chicago fire swept away), and I have watched his progress and work with a great deal of interest. A great deal of what he has done I admire, but most of all I admire what he has done this morning. It is something which I apprehend none of the rest of us would have had the moral courage to do. "He is the greatest victor who conquers himself."

MR. GREENBERGER—It went against the grain.

DR. GILLETT—We see what grace can do. Now, Mr. Chairman, I think we have got to a point where we may all take a valuable lesson. I am satisfied Mr. Greenberger is sincere, and I know the brethren who differ with him are just as sincere as he is. He is laboring to accomplish a given end in one direction, and others to accomplish the same end in another direction; and this calling of hard names, and of saying hard things, and of being suspicious of one another, ought from this morning to cease.

MR. GREENBERGER—I want to indorse every word that my friend Dr. Gillett has said. I have come to the conclusion long ago, Mr. Chairman and gentlemen and ladies of the Conference, that the American people, who are the highest tribunal in this land, from which there is no further appeal, have long ago decided this dispute that has been going on among us for over forty years—

DR. GILLETT—A hundred years.

MR. GREENBERGER—Yes, a hundred. I will accept the amendment. They have decided in favor of articulation, of giving speech to the deaf.

MR. GREENBERGER—One word more; listen to the end of it, now. I admit that the speech which we give pupils is imperfect, but if you want to go ahead of us you have to give more perfect speech to the deaf. That is the only thing I am afraid of. I am afraid, Mr. Chairman, that when all of these great geniuses that there are among the deaf-mute teachers of America apply all their ingenuity and all their powers of intellect to the furtherance of the cause of articulation teaching, they will show results which will throw us into the dark forever!

PROF. DOBYNS—If the love-feast is over, I will proceed to read these short resolutions which I have:

> *Resolved*, That it is the sense of this Conference that the interests of deaf-mutes and the subject of their education have assumed such proportions and demand such attention that it is deemed proper and desirable to secure space and arrange for a deaf-mute department in the Cotton Centennial Exposition to be opened in the city of New Orleans December 1, 1884.
>
> *Resolved, further*, That a committee of three superintendents of institutions be appointed to consider the feasibility of such a plan, and, if found practicable, to make the necessary arrangements.
>
> *Resolved, further*, That we will lend such a movement all the aid in our power and give it our hearty co-operation.

And in explanation of that I would say, Mr. President, that of course I do not know what can be done in the direction, but if such a committee were appointed, they could correspond and confer with regard to the subject, and if we find it practicable we can get in the city of New Orleans an intelligent, accomplished deaf-mute gentleman, (by the way, I think we can get one who can sign and articulate both,) and we can all come together down there and have another love-feast. We can appoint a superintendent and we can put various things on exhibition there, and I think it would be a great thing for deaf-mute instruction. We can have head-quarters there for deaf-mutes, or their friends who may desire to visit New Orleans during the exposition, and I am satisfied that it would be a very interesting feature in that exposition. Before I yield the floor I will just say this, that my institution is on the main line of road leading from the north to New

Orleans and that the latch string of the Mississippi Institution is always out, and I should be glad to see Mr. Greenberger and Prof. Bell and Dr. Gillett and Dr. Gallaudet, or any teacher, superintendent, matron, steward, monitor or officer, or pupil of any institution in this country; and you will always be welcome, and if you will just drive to my institution you will find accommodations. I understand that every department of education and industry is to be represented at this exposition.

THE PRESIDENT — I would like to inquire of Mr. Dobyns if this does not come under the Department of Education, if it is not so classified at New Orleans.

MR. DOBYNS — A part of it might come under the head of Education, but my proposition was to have a Deaf-Mute Department, in which we have everything relating to deaf-mutes, and everything they have manufactured or invented.

THE PRESIDENT — I think that ought to be done. I have had some correspondence myself about that very question. Our governor and the executive officers of our State have said that this comes under the Educational Department, which is in the hands of our State Superintendent of Public Instruction, and so I have acquiesced in the matter; but I am afraid that that department will be so crowded with these other questions, of Public Schools, of Universities, of Normal Schools and things of that sort, that we, who are interested in this department of the work, of the education of the blind, the deaf and dumb and the imbecile, will be crowded out. There ought to be head quarters and a department at that exposition (which is now assuming the shape of a world's exposition), and I hope if anything can be done, at this late date, to give any department to these deaf and dumb institutions, that it will be done.

MR. DOBYNS — My idea was this, — let this committee be appointed and see if anything can be done, and leave the matter entirely to its discretion.

The resolutions were then adopted, and the chair appointed as members of the committee, Mr. Dobyns, Mr. Greenberger and Mr. Noyes.

MR. WILLIAMS — Mr. President, on behalf of the committee appointed to examine text-books, I would call the attention of the Conference to one other book that has been presented to us for examination. It is a book on language, — first lessons — called a Primer for Beginners. The author of it is Mrs. Mary Laughlin. The book has some excellent points about it; it is very fully illustrated, has a very large illustrated vocabulary, and then it has illustrations wherein the sentences are illustrated. It seems to me that this is an excellent point about the book. It needs careful revision, but there is a great deal in it that might be worked up into a very useful book for the deaf and dumb. One new point in it is that, in the vocabulary the picture is given and the printed word is given, and also the word spelled in the manual alphabet. Then there are places where the stories are worked out. It is a book that would cost a great deal to print, it is so fully illustrated. The book is here and can be seen by any who would like to examine it.

Dr. Gillett—I have looked over that manuscript this morning somewhat. Mrs Laughlin was a teacher in the Illinois Institution, and was an excellent scholar, and some features of her book are very good. My recollection in regard to her is that she was a natural mute. It has been a number of years since she left the institution, and some advances have been made in the method of instruction since she was a teacher. I shall be glad to see her book published.

President Mott—Mr. Chairman, I beg leave to offer this resolution. I offer it as a layman, from whom it may perhaps better come than the superintendents that are here. The Secretary will read the resolution, and I move its adoption.

The Secretary (reading)—*Resolved*, That the practice of some of the institutions for the deaf and dumb, of retiring officers of long experience, whose vigor and manhood have been spent in the service of the institution, on a pension of half pay, receives the hearty approval of this Conference, as a matter of justice which should be recognized in all institutions.

Mr. Crouter—I would like to state in connection with this resolution, that I am very happy to say that in the Pennsylvania Institution for the Deaf and Dumb at Philadelphia, it has been the custom of retiring officers in this way. It is certainly very gratifying to those engaged in the work to feel that they can look forward to something to support them in their old age when worn out in the service.

President Mott—I would like to say, Mr. Chairman, that if I could have had an amendment of my own added to this resolution, I should have said, on condition that they take the most convenient palace car they could possibly get and attend all these reunions.

Dr. Gillett—I would like to add to what Mr. Crouter has said, that that has been the practice of the Illinois Institution in some cases; some were retired on full pay.

Mr. Dobyns—Mr. Chairman, I don't know about the propriety of the adoption of that resolution. I would like very well to be retired on half pay or whole pay if I should serve twenty-five or thirty or forty years, but I don't know how it would come as an expresssion of the feelings of this Conference. It might be construed as an effort or a trick on the part of some of us who are now in the service some day to retire in comfort and ease—

Dr. Gillett—We ought to.

Mr. Dobyns—And I do not believe I can vote for that resolution. I tell you we men who occupy these positions as superintendents of State institutions get enough thrown upon us already. Why, if we go to the legislature and ask for $5,000 with which to put up a building, they say, "Why, that fellow has got a better building now than I have got at home;" and they say "Well, we don't know whether all this money will go into that building or not; it may be that fellow will pocket some of that money;" and while I am poor (almost as poor as Job's turkey), I don't believe I can vote for that resolution. Honestly and candidly, I do not believe that this would be a proper source for the resolution, and I cannot, I think, vote for it.

Mr. Swiler—Mr. Chairman, I am apprehensive that my brother from the south misapprehends the force and tenor of this resolution. I take it that it applies to the faithful teacher, to the earnest, sincere and persistent worker, who in the school room and in the study room and in private consultation with his pupils and classes, has for twenty-five or thirty or forty years devoted his time, his energy and all his thought to the work of instructing the deaf and dumb. And I take it, sir, that it is an eminently proper thing for this Conference of superintendents and principals to indorse this resolution, so advanced by one who stands, not with us but above us, as a member of the board of trustees of a deaf and dumb institution, and that we should say we approve of this, as a testimonial of regard and esteem to those who have been faithful in the discharge of their duty, and as a provision for those who do not, in many cases, receive an adequate compensation for their services while at work.

Dr. E. M. Gallaudet—Mr. Chairman, if the resolutions are not limited to instructors and officers of lower grade than superintendent and principal, I should be glad to move an amendment so to limit them.

Dr. Gilletet—*All* officers?

Dr. E. M. Gallaudet—I should think so, with reference to the very composition of this body. I see force in the remarks of my friend from Mississippi (Mr. Dobyns), and also force in the remark of my friend from Wisconsin (Mr. Swiler). I must say that I think it would be a little inappropriate for us to say to the world that we think our boards of directors ought to pension us when the time comes; I think we ought not to say anything about ourselves at all. But I think it is eminently proper that we should say something about the subordinate officers and instructors of the institutions, and if the boards of directors, when they came to act upon this suggestion and carried it into effect, saw fit to give to some of us a comfortable pension, at the time when we were no longer able to labor, why perhaps some of us would refuse it and others of us would accept it.

President Mott—I don't think Prof. Dobyns understands the resolution perfectly.

The Secretary then re-read the resolution.

It does not say that we recommend others to follow the same example, but that we desire to express the approval of the Conference of what has already been done, and it leaves it open, of course, for some of the other boards to do as they please. It is an expression of approval of what has already been done.

Mr. Dobyns—I understand the resolution, understood it fully in the first place, but I don't want anbody to think that we desire to be retired on half pay. There is no use talking, some will think, (and while I am satisfied that the gentleman who offered that resolution had no thought of anything of the kind,(I tell you there are people that will think that we want to be retired on part pay, and for one, I don't want anybody to imagine any such thing of me.

President Mott—Let me ask the gentleman if he don't want to be retired on half pay when he gets worn out and does not have enough money to give him a decent support.

Mr. Dobyns—Well, I would want my uncle or aunt, or somebody else, to help me along.

President Mott—Wouldn't you like to be retired on half pay, that is the question?

Mr. Dobyns—Oh, I would want to be.

President Mott—That is the way we talk in Minnesota—we say just what we want, and we get it that way.

Mr. Dobyns—If my board of directors should say, "We are willing to pension you," I would say, "Gentlemen, I am very much obliged to you," and if I was so poor that I couldn't do any other way, I might accept it; but I cannot stand up here, while in vigor and strength, and well enough to work, expecting to live for twenty years and to get enough to support myself, and say that I want anybody to support me when I am old and decrepit. I am not a teacher now, although I teach sometimes; I am a superintendent, but if this resolution is confined to teachers or subordinate officers of the institution, I will give it my hearty support, but I cannot, as a superintendent, vote for the resotion.

DR. MCINTIRE—Mr. Chairman, I think my friend from Mississippi is a little sensitive where there is no need for it. I have been forty-five years in this position—

PROF. NOYES—Not in a hurry to be retired, are you?

DR. MACINTIRE—No, I am not; and I think this is eminently proper to come from the principals, and it is no impeachment of anybody, and it gives no ground for any suspicion on the part of trustees or legislators. Any legislator that would object to that or make that an excuse for not doing his duty I think is not worth minding.

Now, it is a poor prospect for a man when he receives merely his bread and butter and a salary sufficient to clothe him, after working forty or fifty years, and his health failing, with a family and others dependent upon him, to have resort to nothing except to go out as a day laborer and do something. There are many whose health fails. Here is a young man who has been in the service a long time; he is a faithful man, but if his health fails him and the board of trustees turn him out into the pasture as they might a broken-down horse, (they wouldn't do so to a horse,) why not say this: we approve of those instances of retiring upon part pay which have taken place in other institutions? I think a man that would vote against such a resolution hasn't an understanding of his relations to this work and to the institution.

DR. GILLETT—Mr. Chairman, I see a good deal of interest in this matter. I am one of the young men, and I am of course not to be personally interested in it for a good while yet to come, but I have seen the practical operation of this thing in some cases. Take the case of Mr. Baker, who spent his strength and manhood as a teacher in the service of the Illinois Institution until he was worn out and his health was gone. What should be done with him? I recommended to the board of trustees to give him indefinite leave of absence (which was practically a pension) and pay him his salary in full, which we did for years and until he died. He went off to New York, but his salary was sent to him as regularly as any person on the ground drew his salary, and it supported him and his family and provided for the education of his children until he was taken away.

Take the case of Mr. Wait, who died a couple of years ago. He had been for thirty years in the service of the Illinois Institution and his salary was not adequate, and none of the salaries of the teachers of the deaf and dumb are adequate, to lay up a fund for old age. They are expected to receive just about enough to enable them to live and raise a family in comfort; but we all know that they are shut off from speculation, we all know that if they enter into speculations they will be regarded as neglecting their proper duties and obligations they owe to the public in view of the consideration they receive, and they must confine their duties and give their energies and their powers, and their thought to the work of the school room. Mr. Wait spent thirty-three years in the service of the institution. He has had a support, and that was just about all he had, and he was worn out, and one of the last expressions on the day that Mr. Wait went away from us, was: "You lay all your duties aside and I'll see that you are taken care of as long as you live, and your salary will be continued." And it was a great comfort to him, but unfortunately he did not live long to enjoy it, but if Mr. Wait were living to-day, there would be no one for whose salary I would send a check with more satisfaction than I would for his; and I know I speak the sentiments of the trustees of our institution, and of the people of the State of Illinois; they have as high a respect for the men who fight the battles of peace as they have for the men who fight the battles of war. It is only right, and I hope that this resolution will obtain.

Now, I know what is said about superintendents. I have spent in this work millions of dollars that belonged to the public, and I have heard men say, "If you are not rich you are a fool." Well, I would rather be a fool than to be rich that way, and if I don't leave my family anything else, I'll leave them the heritage of an honest farmer; and I would rather go into my grave a pauper than to go into my grave a thief. I could have been rich if I had practiced that way, but I never did, and God helping me, I never will. Now, a man who is handling public money is in one of the most precarious positions (and my friend Mr. Mott will sustain me in that assertion,) and in one of the most dangerous situations of any man in all public life. Everybody suspects him, and he has to guard his acts with the utmost care. He cannot purchase a house and lot that somebody does not think or suspect that he has gotten it wrongfully. He cannot get himself a decent carriage to ride in that somebody does not say: "There goes somebody at the expense of the public," and so on; and if he maintains himself, he must guard all his transactions with the utmost precision and the utmost care possible, and if he enters into speculation, public confidence will very soon be lost.

I say, Mr. President, that this is just and it is proper; it ought to be recognized by this Conference, and it ought to be recognized — as I believe it will be — by the people of this great land.

Dr. MacIntire — Mr. Chairman, let me make one remark.

The President — Prof. Swiler has the floor.

Prof. Swiler — Mr. President, in regard to this resolution and its effect on the Conference here assembled, I can see that my respected friend Dr. Gillett occupies a position which perhaps none of the rest of us hold. He, by virtue of his office, is a member of his board of trustees, and may speak as a member of the board of trustees. Our respected President aud friend Mr. Mott is a member of the board of trustees of this institution, and as members of such boards, it seems to be an exceedingly fitting thing that they should advocate the adoption of such a resolution; but it does not seem to me it is exactly the thing for us, as superintendents and principals, here to support and indorse this resolution, except it be amended, and I would suggest such an amendment in the substitution of the word "teachers" for "officers" in the resolution as read, and then, it seems to me that it is eminently proper that we who have the direction of the affairs of the institution, and to whom our teachers look for countenance and advice, for assistance and support in every direction, should pass this most appropriate resolution.

Ppesident Mott — The amendment I propose to incorporate is like this: "Officers and teachers."

Mr. Dobyns — I will support that resolution if it reads "teachers." I can not support it if it contains the word "officers."

President Mott — But see here. I include stewards, secretary and treasurer and everything else in this institution. Now, suppose I myself should come to want soon; don't I want to get in?

I want to say one thing about this matter, although I know I ought not to. I am shouldering this resolution, and I am glad to do so. I sympathize with my friend from Mississippi. He is sensitive over this—he don't want to be classed among those who are receiving gifts. I feel just as he does about this whole thing. But now stop a moment. He ought to vote, not in his own interest in this matter, but in the interest of the men that have been pictured here as worn out in this good cause.

PROF. SWILER — Those men were teachers.

PRESIDENT MOTT — Yes, but I don't care —

MR. DOBYNS — The superintendents all look healthy and strong.

PRESIDENT MOTT — I have got "teachers" in this resolution. We have had pictures of some from Illinois that have been worn out in this work, and some from the State of Pennsylvania, where these States have done something to relieve their wants, in what I consider a delicate and honorable way. Now, all we say here is, "Gentlemen, although we hate to be included in that class of individuals, yet, after all, we do approve of that generosity of yours."

DR. GILLETT — Just strike out the word "officers."

PRESIDENT MOTT — I would like to say one word more. My friend spoke of going to the legislature and asking $5,000 to build a building. Now, will you bear with me while I say that, in my opinion, any superintendent who appears before any legislature, when he has got any other man in the State that will do it for him, to ask for an appropriation, is unwise, and if you have any other man in the State that will go and lobby and get your appropriations for you, it is unwise for you to get mixed up in political, financial or legislative matters in that way. You can move with your boards (over whom you ought to have influence), letting them do all that work and getting all the curses, and you will be relieved of that embarrassment. Look at our friend right here, Mr. Noyes. He has kept out of all that sort of thing, and the result is there never has been a political complication, there never has been a stain or a word of reflection cast upon the superintendent of our institution. Why? Because he has not gone to the legislature and asked for anything.

MR. DOBYNS — May I ask the gentleman a question? Does Mr. Noyes, in his report, make an estimate of the appropriation needed?

PRESIDENT MOTT — No, sir.

THE CHAIRMAN — This part of the discussion, I think, is out of order.

MR. SHAPARD — Mr. Chairman, if this resolution is intended simply as an expression of our appreciation of the acts of these institutions which have allowed this pension, I think it is altogether proper. There is nothing indelicate in such a paper going out from this institution. But if it is intended to suggest a financial policy for institutions generally, then, perhaps, it would be unwise to pass it hastily. The idea might be spread abroad that the object was to benefit the financial condition of the officers. Perhaps it might not have that effect.

Now, I have belonged, myself, to a body of men who are pensioned, you may say, after they are disabled by long service, or by disease, and yet the salaries of these men are fixed with reference to their condition, and if it should be adopted as the general policy in all the institutions of the land, to pension the disabled officers and teachers, then the question might suggest itself to the trustees or to the legislatures in this way: these men are provided for in case of disability. Now, something more is necessary than that they should have a bare support during their term of service. I think a better plan would be, if it can be made practicable, to have these officers and teachers well salaried during their active service. Let every man be his own financier; give him enough to support himself comfortably and at the same time enable him to make some provision for the time of his disability. I would like the idea of every man being his own financier. I appreciate the delicate feeling of my brethren here — it has become very common to receive pensions — but perhaps it is not best to make the thing broader in its extent than it already is. I think if you propose to establish it as a financial policy, or to suggest it as such, that it would be better to refer it to a committee, to consider it deliberately and to weigh it in all of its bearings.

MR. DOBYNS — How is the resolution amended?

DR. GILLETT — Perhaps if it read this way it would meet the case. How many years, Mr. Crouter, was Mr. Foster superinintendent?

MR. CROUTER — Forty-five.

PROF. NOYES — Not superintendent but teacher.

MR. CROUTER — He was a superintendent and teacher.

DR. GILLETT — And he was utterly worn out. And how long was Miss Kirby matron?

Mr. Crouter—Thirty years.

Dr. Gillett—And her whole time was given to the service of the institution and when she became worn out what was to be done with her? I thank God that there were men in Pennsylvania who had it in their hearts to provide for that noble woman. And there are such men in Mississippi and in the States all over the Union, and they would act accordingly if the matter were properly considered. I think if the Conference would make the resolution read like this, it would meet the case: "*Resolved*, That the practice of some of the institutions for the deaf and dumb of retiring officers and teachers"—don't want to cut out the matron; I tell you what, the matron's is the hardest place in the institution to fill; why, Mr. Hammond's little boy said, the other day, he was growing up to be a matron; he didn't want to be a superintendendent.

Mr. Shapard—Let me make a suggestion. I think we ought not to leave out the superintendent.

Dr. Gillett—I say nothing about the superintendent: (Reading) "*Resolved*, That the practice of some of the institutions for the deaf and dumb of retiring officers and teachers of long experience, whose vigor and manhood have been spent in the service of the institution on a pension of half pay"—perhaps strike out the word "pension"—would you accept that amendment, Mr. Mott?

Mr. Mott—Yes sir.

Mr. Hammond—I think, perhaps, it would be better to strike out the word "half," wouldn't it?

Dr. Gillett—"Half pay receives the hearty approval of this Conference as a matter of justice."

President Mott—Leave off the last clause.

Dr. Gillett—I regard the superintendent as an officer as well as the matron.

The President—You have heard the resolution as last read. All in favor of the motion will signify by saying aye. I think the ayes have it. It will be so recorded.

The resolution as adopted was as follows:

Resolved, That the practice of some of the institutions for the deaf and dumb of retiring officers and teachers of long experience, whose vigor and manhood have been spent in the service of the institution on half pay, receives the hearty approval of this Conference as a matter of justice.

The regular order of business was then called for, and the

President announced the next thing in order to be a paper by Mr. Gillespie upon the Aural Method.

Mr. GILLESPIE—Some of my friends in New York have already heard what I have to say upon this subject, and of course they will listen if they *can*.

It will be remembered that at the last meeting of this Conference, at Northampton, Mass., this subject was discussed at some length. It was my privilege to state at that Conference the results of some experiments I had made in this direction. I then expressed the hope that great good would result from these. It is my privilege now to give somewhat of the fruition of that hope. What was then nothing more than experiment is now a demonstrated fact.

The class to which reference was made consisted of grown children. The next class was made up of the smaller semi-deaf children. This was also an experimental class, its object being to see whether or not the same course of drill would produce similar results in small children as were secured from those of more mature age. The experiments consisted in speaking vowel sounds in a loud tone of voice; then words and sentences; the children using the audiphone throughout.

At the beginning they did not recognize sounds as such, but as a confused noise. They had hearing, but it was in a dormant, useless state. They were unable to distinguish the difference in sounds.

These children received a drill from one-half to three-quarters of an hour daily for a period of about three months. At the end of that time they had a fair vocabulary of words. They could recognize them singly or in sentence connection. They were trained, also, during this time, to keep step to music, and this was no small item in determining the value of the experiment.

These two classes represented nearly every condition of pupil which we had, or would likely have, as to age, cause of deafness, degree of deafness, intellectual ability, etc. The result thus obtained, I have said, has proved that this dormant sense could be aroused, developed and utilized in the education of this class of children. With this idea in view the class of 1882 was formed. The method of instruction was the same as in the experimental classes, carried out more fully. The manual alphabet and sign language were not used, at least rarely. Instruction was given orally, by object lessons, pictures, action work, dictation exercises, and such methods as are practiced in the common schools were used.

At the close of the school year these children had accomplished all that could be expected of any class of equal ability, taught by the usual methods of our institution. They had a vocabulary of 200 to 500 words, which they could recognize by the hearing, and could speak and use them in composition quite well.

Last fall another class was added to this department. Those in the school, from the first class down, who had some hearing, were taken out of their respective grades and started at the bottom of the ladder by the aural system. The plan pursued was the same as in each of the other cases. This class had a vocabulary of from 500 to 800 words at the close of the school year. In order to test the accuracy of the hearing, two of the best pupils were selected and a list of 619 words pronounced by the teacher in a clear and distinct voice, louder than a conversational tone. The pupils sat with their backs to the teacher. Of these 619 words one boy wrote, at the first trial, 603, the other, 593.

The question was asked if these same boys could recognize such non-voice consonant sounds as "f," "t," "p," "sh," etc. To answer the question correctly a list of eight of such sounds was prepared and the list repeated, thus making sixteen sounds in all. Of these, one boy made three errors and the other four. The result of this test was a complete surprise to me, as I had not supposed that they would recognize those sounds so readily when not in combination.

As an examination exercise for this class, twenty words, twenty statements and twenty questions were selected at random from the list covering the ground gone over during the year. This exercise the three pupils who had made the most rapid progress, orally speaking, had perfect marks, with one exception. One boy made some error in a part of a sentence.

These results demonstrate clearly to my mind that this class of children can be taught to hear, and that their education can be carried on by this means. As to what takes place in a scientific point of view—whether the nerve of hearing develops as the muscle develops by use, or whether this is an education of the brain to perceive sounds heard but not understood, or both—is a question for the future to decide, and which I will not here discuss. This much I will say, however, that this sense of hearing, which has lain dormant and useless up to this time, is now sufficiently developed to be of great benefit to these children, and no one is more conscious of it than they themselves. They know that heretofore they heard not, and that now they do hear. They know that it has not been done miraculously, but that it has been brought about by patient, hard work upon the part of their teachers and themselves.

My experience and observation in reference to this question lead me to this opinion, that a large majority of this class can be graduated from our schools as hard-of-hearing speaking people instead of deaf-mutes, as heretofore, and that it is our bounden duty so to graduate them. And by this I do not mean an exceptional case here and there, but as a class. The class of hard-of-hearing speaking people in society is large, but a hard-of-hearing speaking child or one using an artificial aid to hearing is a rare sight. The reason for this may be found in this fact, the hard-of-hearing child became so before he learned speech; the other learned speech before he became hard of hearing. The child is too deaf to be educated in the public schools; he is reported as a deaf-mute and sent to an institution for the deaf and dumb and educated and graduated as a deaf-mute. He goes through life deaf and dumb, while his elder brother is in no way different from the great mass of the people other than that he is hard of hearing, and yet the former may have a greater per cent of hearing than the latter. Manifestly this is not right. What is the remedy? My opinion is that the remedy is found in what I have termed the aural system. By it this class can be taught to hear and receive instruction through the medium of the hearing, and eventually be placed upon an equal footing with the hard-of-hearing class.

As to the number that can be benefited by this system, I have no doubt but that fifteen per cent can be aided. We have more than this number under aural instruction, and fully this number are benefited.

The question has arisen as to what amount of hearing a pupil should have to be a fit subject for this system. In answer to this I would say I know of no test by which this can be determined, of no point at which a line of demarkation can be drawn, and all upon this side to be educated by this system and all on that side by that system. A trial of each individual case where any hearing exists will determine the matter for him, and this I believe to be the only satisfactory test. If the number who can be benefited by this system is found to be as great throughout the country as I have suggested, the question assumes vast proportions, and should have the immediate attention of this Conference.

These semi-deaf children are in our schools to-day, and will continue to come and be instructed with the totally deaf until other provision is made for them. They do not hear enough to be educated in the public schools—they have too much hearing to be lost by being instructed with those who have none. It must not be lost. We must recognize a new subdivision of the so-called deaf and dumb. We should have schools intermediate, between the public schools and schools for the deaf, for this class. *I most earnestly favor an aural department or branch in connection with our institutions.*

I do not recommend that this work be carried on as an accomplishment, that instruction be given by signs or lip reading, but that from the beginning it be made the system of instruction; that communications between teacher and pupil and among the pupils, so far as possible, be aural. I have no fault to find with those of the profession who regard the sign and manual system as the best, nor with those who consider the oral system as the one to be tolerated. The signs of the times indicate that we are somewhat more ready to deviate from our former views on both sides, we are already more ready to concede that there is something to commend on the opposite side from which we stand. We are getting closer together. Whatever may be our preference, and whatever we can use to the best advantage, let us use it. Let us make all contribute to the aural system, by which the semi-deaf shall be taught to hear.

DR. E. M. GALLAUDET—Mr. President, it is only fair, perhaps, to those who are not here, and who were not at the New York Convention (where I had an opportunity of saying a few words on behalf of this system), that I should say that during the month of February last I spent a part of a day in the institution at Omaha, and heard, with a great deal of satisfaction, the results of the effort there being made to develop the power of hearing of the semi-deaf; and, in a single word, I most heartily indorse what has been said by Mr. Gillespie, and hope that the subject will receive the very serious consideration of the Conference, and the very serious consideration of all the heads of institutions throughout the country. I think we are bound (as those who know me are aware has always been my purpose) to accept and adopt every means that can be found to be beneficial more than any other means for the elevation, improvement and development of any sub-class of the large class of the deaf and dumb whose interests we have at heart.

Mr. Hammond — Mr. Chairman, it would naturally be supposed that, living within hallooing distance of Mr. Gillespie's institution, I should have been over there at different times and watched carefully the results of his experiments. I entered this class last fall, and at that time a few had been added to the ones he had previously had. One or two of those boys had been in school before and had been graduated, or had left the school after some instruction, as deaf and dumb, but with the idea that some hearing had been developed by this method.

The first time I visited the school the teacher gathered the pupils all together in one corner, and they used the audiphones, but there was a great deal of exertion required to make them understand. The teacher would stand close by the pupils, as close as I am to that table [about four feet], and, of course, those that were hardest of hearing would be nearest to her, and she would then speak in some such tone as this: "BOY!" "DOG!"

Dr. Gillett — Louder!

Mr. Swiler (the interpreter) — That does not need any interpretation. The deaf all hear it.

Mr. Hammond (continuing) — And when they got it they all tried it. And a good many got it the first time. A good many had to try it several times. It was splendid exercise for the teacher. I can not conceive of any place where I would like better to see a teacher who needed some physical development than there. Of course the teacher was a lady.

Mr. Swiler — I should think there would be danger of overstraining in such exercises as you mention.

Mr. Williams — How long before the teacher would need a *pension?*

Mr. Hammond (continuing) — I visited the institution in perhaps six weeks or two months after, and the audiphones had then been laid aside, and the teacher was not standing close by the pupils, but had removed, in some instances, as far as from here to that slate [about fifteen feet], and was speaking in a much more moderate tone of voice, and the vocabulary had become enlarged — well, perhaps a thousand per cent; that is, when I first went there some of the boys I don't think had to exceed twelve or fifteen words, and at my second visit I think they had reached over a hundred; and they could write when the teacher used a tone of voice not very much beyond what I am now using.

I visited the room again, in company with Dr. Gallaudet, in February, and those same pupils were then taking sentences from the sound made by the teacher, and the teacher was still standing at the opposite side of the room; and they were also answering questions — questions in the geography of the State, and ordinary questions, such as we ask in our sign classes, "How old are you?" "Where do you live?" "What is your father's name?" "Do you want to see your mother?" "Do you want to go home?" etc. They did not use the audiphone at that time. The first was the only time that they all used the audiphone.

PRESIDENT MOTT — I suppose they broke the audiphones all to pieces.

MR. HAMMOND — The responses of the pupils were, of course, not in anything like such a voice as the teacher had used, nor in what you would call a well developed voice.

DR. MACINTIRE — They understood language previous to this?

MR. HAMMOND — They were picking up this thing, you know. Of course, you might try them on words that they had never heard, that they had never been taught, and then they would be "at sea;" it would be something that would be entirely new to them. They had to have these words repeated, and this sense, or nerve of hearing, or whatever you call it, developed.

DR. MACINTIRE — Excuse me, but I want to get at the point as to what degree of language these pupils had before they were put under this method of instruction.

MR. HAMMOND — Some of them had none, and Mr. Gillespie will tell you what some others had when starting.

MR. GILLESPIE — As I stated in the paper, there were three classes, one composed of grown children, another of smaller, semi-deaf children, and another, added last fall. The class to which Mr. Hammond refers was made up of children of all classes, from the first down. They were started on the aural plan, you understand — to teach hearing alone. The children were willing, I was willing, and the parents were willing.

DR. MACINTIRE — The meaning of the words was explained, how was that, by writing?

MR. GILLESPIE — To those children we did not give any words they did not already know, as soon as they saw. They knew the words.

MR. HAMMOND (continuing) — Well, then I suggested to Mr. Gillespie that probably a further test of this thing would be necessary, and suggested procuring some sort of instrument by which, at the same time they endeavored to repeat the words after the teacher, after having written them on the board, they could themselves come to understand the sound of them, and I suggested that some flexible tube, trumpet, or something of that sort, be used so that by talking into them they could hear the sound of their own voices. He made some experiments of that sort and perhaps with partial success.

The next time I visited that institution, there were some boys who were able to communicate some such words and sentences to the teacher, as they stood at the board. Those were about the results of the examinations that I made of that class from time to time; and they were sufficient to induce me to believe that that system, with those partially deaf-mutes, could be carried on to such an extent, in several years, as to give them a vocabulary of words so that they could get along with ordinary people, because I found that the words which they had learned, they understood from the voice of a stranger, although of course they understood their teacher's voice better than anybody's else (which is natural), but all those things have to be worked out patiently, and have to take a good deal of time. I think the advance was such as to warrant the continuance of the class, and its introduction as an experiment into each one of the institutions. I should have introduced it into the Iowa Institution before now, if we had been conveniently able to do it.

DR. GILLETT — Mr. Chairman, will Prof. Gillespie allow me to ask him a question? Why is it better to make this special provision in institutions for the deaf than to make the provision in connection with the common schools?

MR. GILLESPIE — Well, sir, for this reason, that public schools have no occasion to deal with these cases. There are in the public schools to-day a good many such children, and nothing is done with them, and I don't know any other reason for that, except that under the supervision of men who are interested in this unfortunate class, more attention is devoted to them, and they make a success of it, which will not be done, probably, in the public schools. It is a special work, and requires special ability in that direction to undertake it. Public school teachers do not think there is any success in it.

MR. DOBYNS — Is it not a fact that they are scattered around so through the city that no public school could get enough together to form a class?

MR. GILLESPIE — That is true; yes, sir.

MR. SHAPARD — It requires a teacher of some experience, does it not?

MR. GILLESPIE — It does.

MR. CROUTER — Does the teacher of a class of this kind find it necessary to confine her efforts to a single individual, or can a number be trained together, in the same class?

MR. GILLESPIE — Well, of course in this class the more advanced children very soon get separated from the others. There were two divisions.

MR. CROUTER — About how many in one division?

MR. GILLESPIE — About five or six.

MR. CROUTER — About twelve in a class?

MR. GILLESPIE — Yes; it depends on the improvement and the amount of hearing, of course.

PROF. NOYES — I would like to ask Mr. Gillespie one question on this subject; if I understand aright, judging from the progress that these children have made in hearing, the probability is that they will graduate from your school in a short time and be able to enter a public school; will they not?

MR. GILLESPIE — I hope so; yes, sir.

PROF. NOYES — Miss McGowen (who, by the way, was expecting to be here) fully expects that the hearing of some of the children now in her charge will be so developed in a short time as to be able to leave her voice and hearing school and join their brothers and sisters in the public school; and, if I understand your paper aright, your point is that in the near future you have reason to expect that the hearing of some of your pupils will be so far developed as to enable them to hear and be educated in the public schools.

MR. GILLESPIE — Yes, sir; one of our teachers has in her school, or had in her school last year, one boy who had made remarkable progress, and I have no doubt that he could enter the public schools in the course of a couple of years. Of course the teacher would be obliged to pay particular attention, to see that he could hear what she said to him. He would not get along as rapidly in the public school as he would in this class. We have one boy in the class that I think could go into the public school in the course of a year if the teacher would give him special attention.

DR. GILLETT — Do you think that is because he will hear better then than he does now?

MR. GILLESPIE — His vocabulary would be enlarged and he would be more accustomed to taking words from strangers.

Mr. Bell has asked a question with regard to lip-reading and I will speak on that. During the progress of one of the classes the teacher, on account, perhaps, of this exercise of the vocal organs, lost her speech for a few days; and just to demonstrate to you how much they depended on hearing, I will state that while she could not speak and they had to depend upon the lip reading, they did not understand half of what she said. That will demonstrate very clearly to your mind how much they depend upon the hearing. In our examination exercises the lip reading, *combined with the hearing*, was good; the lip-reading separate from the hearing was very poor,—which will demonstrate that they depended upon their hearing for their knowledge.

A MEMBER—Was the hearing distinct from the lip-reading?

MR. GILLESPIE—The hearing distinct from the lip-reading was perfect.

DR. GILLETT—Well then, why not send them home?

MR. SWILER—Do they not, to a very large extent, depend on lip-reading.

MR. GILLESPIE—They do not.

MR. SWILER—How do you prevent it?

MR. GILLESPIE—By turning their backs so they cannot see the teacher's face at all.

MR. SWILER—Is that occasional or regular?

MR. GILLESPIE—That is regular. We have exercises in which we use both sight and hearing, but I don't want you to understand we are talking up lip-reading now and talking hearing, because we are not; we are talking hearing right through.

MR. SWILER—My inquiry is not intended to cast any discredit but to ascertain how you produce these results,—because I have found that difficulty in some attempts of that sort myself.

MR. GILLESPIE—Turn their faces right away from the teacher and face their backs.

THE PRESIDENT—I would like to ask if they are taught by the sign method.

MR. GILLESPIE—We teach them by the combined method—which means everything—it means lip reading, it means speech, it means hearing, it means sign and manual alphabet, and everything else.

THE PRESIDENT—How long each day are they taught in the hearing class?

MR. GILLESPIE—They are taught all day, by all methods.

THE PRESIDENT—In some of the institutions they take articulation and lip-reading together in a class room, but I wanted to understand how you arranged with that matter.

MR. GILLESPIE—I will answer that: This class is what we term our hearing class; it is taught from morning to night orally and aurally, or rather aurally and orally; that is, the hearing is trained all the day long, whether it is when the back is turned, or when the children are facing the teacher. She speaks in a tone of voice loud enough to be heard.

DR. MACINTIRE—What degree of hearing would be required for an admission into the class?

MR. GILLESPIE—That point I answered in the paper in these words, that I have found no test by which we could decide that question except a trial in each individual case. If the child has any hearing, try it.

DR. GILLETT—Suppose he has no hearing?

MR. GILLESPIE—Why, then say nothing about it.

DR. MACINTIRE—You say there are fifteen per cent of your pupils that are capable of this degree of hearing?

MR. GILLESPIE—Yes, sir. We have commenced with such as could not recognize such sounds as "o" or "e"—couldn't make them—didn't know how—the vocal organs had been dormant and useless.

DR. GILLETT—How many of these cases were cases of acquired deafness and how many were congenital?

MR. GILLESPIE—I have not those statistics in my mind, but I think we have seventeen altogether, and eleven of those are congenitally deaf and six lost their hearing by accidental causes. I think that was the proportion.

This question is asked by Mr. Simpson, of Dakota: "As I understand it, lip-reading is not encouraged, but is taken with those whose hearing cannot be benefited, but who can talk and may be like the scholars in lip-reading." I do not wish to be understood that lip-reading is not encouraged, for it is, and those who have no hearing we treat just the same as our oral pupils, just the same. Those in classes where the hearing is not capable of development, depend on lip-reading; we teach them to talk by the lips, and symbols and so on; so we do not wish to say we discourage lip-reading. It is the object of the teacher to use all these means.

MR. MATHISON—Then, the Nebraska School is just merely a combined school, really.

DR. GILLETT—No, Mr. Chairman, I don't know that that is exactly true.

Rev. Job Turner (Remarks interpreted by Mr. Swiler, of Wisconsin), — Mr. President, and ladies and gentlemen: After a very long and tedious journey in coming to this place, I concluded that I would go to Colorado for my health, and after going to Colorado I came to Omaha, to the institution presided over by Superintendent Gillespie. In all its beauty it appeared before the eyes as a magnificent place, — with sixty inmates, — and after being received I was invited into Miss Plum's class, where Superintendent Gillespie sat down with me, and the class was arranged in order about the room. I supposed that it was going to be the ordinary exercises of an institution for the deaf and dumb, and I was very much astonished indeed, when the pupils turned their backs to the teacher and the word "c-a-t" was pronounced, and the pupils (not hearing, as I supposed, at all), were able to enunciate the word and write it on the slate. I felt myself rising from my seat in astonishment, as the wonder grew upon me that such things could be accomplished in Omaha, even perhaps that my hair commenced to rise from my head, as sentences were enunciated and written with perfect accuracy upon the slate; and as the eye did not see the lips, it gave me still further astonishment at such a novel process, and I thought that this must be the beginning of a new revelation that was going to change all the old and established condition of things.

Mr. Swiler — Mr. President, I do not wish to take the time of the Convention further than to remark that I have had in the employ of the Wisconsin Institution this last year a teacher who had been the previous year in the employ of the Nebraska Institution, and she from her experience there, with the aural method, was convinced that it was an admirable system — that it was a plan that would of necessity assist very materially all children who have to some extent hearing, latent or developed. Her testimony was to the effect that in the Wisconsin Institution, which numbers two hundred and twelve pupils, there were not as many cases that were suitable for aural instruction as in the Nebraska Institution, numbering, all together, ninety-six; that is, that it so transpired in the Nebraska school, there was a larger proportionate number fitted for this kind of instruction than there seemed to be in the Wisconsin school. This may be due to the fact that Superintendent Gillespie has more carefully investigated this subject, but the Investigation that I have had introduced, by this thought of aural instruction, has convinced me that there is in the Wisconsin Institution, (and I am somewhat of the opinion in other institutions likewise,) a larger number than we have been accustomed to think, who may have hearing strengthened by devoting our attention to the subject.

THE PRESIDENT — I want to say to the Convention, after conferring with the chairman of the business committee, that we must hold you sharply to some plan. Mr. Wing has been invited, with certain implements and instruments, which he has obtained at great expense, to come here and illustrate something in relation to this topic; and then the exercise which Mr. Noyes leads will occupy all the time we can possibly devote to this afternoon session.

MR. GILLESPIE — Mr. President, if I can have just a little time I would like to answer two questions upon two points. In the first place, about using tubes. It is necessary to take a good deal of care in the use of those, that young children may not be injured thereby. Now, some think that by using tubes, and so on, hearing can be helped, but the ear is very sensitive, and care must be exercised in that direction.

The other point is as to how you can get the attention of a class with their backs to the teacher. I will answer that by saying this,— that this is practically the giving of a new sense to those children, and they are ready for anything. I have taught a good while myself, both in signs and speech, and I have never undertaken any kind of teaching in which the children were so enthusiastic and so anxious to learn as in the matter of hearing, so that there is no other inducement necessary than just simply to know they are hearing.

THE PRESIDENT — Mr. Wing now has the floor.

MR. HAMMOND — Mr. Wing has written out what he wishes to say and desires me to read it to the Conference rather than himself.

MR. WING says as follows:

PROF. WING'S PAPER.

I have received from Messrs Geo. Tiemann & Co., No. 63 Chatham St., New York, a number of ear trumpets and other instruments for the use of the partially deaf.

I wish to call the attention of the members of the Conference to these instruments, and to make some brief statements concerning them and their use.

I have used an ear trumpet two-thirds of my life-time. Although my deafness is so dense that without the trumpet no ordinary sound reaches me, I can converse freely with its aid. From careful experiments extending over a period of twenty-five years, I can state to the Conference as a fact that more than one-third of the pupils in our institutions have some degree of hearing, and that fully twenty per cent can hear better than myself—or rather, they are more sensitive to sound than I am. As to what proportion of them have partial hearing that is simply deficient and in no way changed in its character, I am unable to make any estimate.

Few persons have a correct idea of what partial deafness really is. It is assumed as a matter of course that a deaf person has less hearing than other people, and that is all. It is well known that a person may be able to distinguish light and color and yet be unable to clearly see the form of an object; another may see the form of every object with great distinctness, and yet be color-blind. That the hearing is subject to analogous vagaries is known to few.

The hearing of a deaf-mute may be remarkably acute, but so changed in its character that he may be unable to distinguish one sound from another. In some, indeed, the sensation produced by sound may be simply one of pain, the difference between sounds being nothing but a greater or less degree of pain. I know that in one of my own ears a blow of a hammer upon an anvil produces no sound, but only a sharp, cutting sensation. I know that some sounds that I hear distinctly with my right ear I cannot hear at all with my left, and *vice versa.* Sounds that I can hear with both ears are altogether different when heard with one, from what they are when heard with the other. Presumably, other deaf people are similarly afflicted in a greater degree than myself.—The late David H. Carroll's hearing was more quick than my own. He became partially deaf at thirteen years of age. He could articulate well, but patient and frequent experiments showed that he was wholly unable to distinguish one word from another by means of his hearing.

Notwithstanding these unfavorable facts, I am satisfied from my investigations that a considerable number of our pupils can readily learn to talk if systematically instructed by means of ear trumpets.

As to the instruments sent by Messrs Tiemann & Co., I will say that, with the exception of the dipper trumpet and the English tube, they are of little value to any but the slightly deaf. The dome trumpet is very compact and convenient for those who are quite hard of hearing, but it is not as powerful as the others. The best instrument for school-room use is the "perforated disc" trumpet. It is the most powerful one made, and gives the most natural and distinct sound. The price is but $3.50. One of these instruments should be used in every institution for the instruction of those who can receive benefit from it.

THE PRESIDENT — Prof. Noyes is now in order.

PROF. NOYES — Mr. President, ladies and gentlemen: I have designated my topic as "A Monitorial System." Those who received a copy of the call of this Conference will have noticed among the various topics indicated as coming before this Conference that there was one topic concerning government and discipline. I have no doubt the superintendents and principals here will agree with me that proper government and discipline in an institution for the deaf and dumb is a many-sided and very important question, and that it is one that is eminently practical in its bearings upon the institution life, and that it has a very great and lasting influence upon the children who go forth from these institutions, and has a very vital bearing upon the class of citizens that these institutions are preparing for the State.

In introducing this topic, I give you an illustration of the plan that we have worked out here. I will give you a little idea as to its results. I don't know that it will be beneficial to any of you, but, as some have desired, I will give you a brief description of it, and if anyone wishes to ask any questions I shall be very happy to answer them to the best of my ability.

You are most of you (at least all of you superintendents) aware that it is very difficult for one man, in his official position as the executive head of the institution, to know minutely the condition and the work, the habits and characteristics of every child in the institution. It is a wonder to me how Dr. Gillett can know all of his 600 little ones, and know them individually, and understand their ways and habits, and what kind of characters they develop. I have found a difficulty right here. How can I know each one of them in their school work, in their industrial work, in their behavior on the play ground and in their dormitories and in their excursions when they go to town? Now, certainly a superintendent cannot be expected to be omniscient and omnipresent and attend to his official duties in the office and otherwise; he must devise some plan by which he can keep a strong hold upon each one of these children in order to accomplish for them what an institution of this kind ought to. Now, how shall he do it?

We regard the educational work as very important, and so it is; it is, I might say, of prime importance, but there is an educational influence from the habits and from the training and the character of these children which does not come from the school-room, and the superintendent ought to know something about it.

Then another point, in all these institutions we must have rules and regulations and laws, and if we have them they must be enforced, for a rule or regulation that is not properly enforced is demoralizing, whether it is in a deaf or dumb instiution or a public school, or in the community. Now, how shall we do it? How shall all these officers and helpers in the institution render proper service and render to the official head a proper report concerning their duties, etc.? Now, what I want to illustrate is the method used in this institution.

I know some of the brethren have sent to me from time to time wanting to know what my by-laws were. Well, I have laid the matter before our board; Mr. Mott, our honored president, is a lawyer, and he very sensibly says, "We can't make a set of by-laws for you by which to manage the institution. We must hold you reponsible for results." I cannot lay down by-laws and rules for the matron; I say to the matron, you must be responsible for the manner in which you conduct the affairs under your charge. I will give you the necessary help, and you must be the responsible party; the superintendent has certain rules and regulations, and they must be carried out. And so with the teachers and the children.

Now, in all these institutions there are children who are disposed at times to be insubordinate—some who, in the course of time, will need very severe discipline; and how shall we do it most successfully? I will enlarge upon that point in the course of my remarks.

This large book is what the boys familiarly call "The Book of Doom." In the early years of my work here I found a difficulty—an incident will explain it. When I was attending the Convention at the institution of Vice President Mathison I received a most formidable document; there were lawyers' papers, there was an executive document and documents from the State Board of health, and there was this that and the other, and my friend Mr. Mott and the board of trustees were somewhat anxious and could not wait, so they sent them—this formidable document—to me in Belleville, Canada. What was it? Somebody in the institution had been a little derelict in the discharge of duties, and a boy had gone home in a condition that was not perhaps just as it ought to have been.

The President—A little lousy.

Prof. Noyes (continuing)—Well, I had the testimony of the lady and of the assistant steward, who attended to the matter of the boys' bathing, that they stood ready to go before the governor or anybody else and swear upon their oath that they had attended to that duty faithfully just the week before they went home. Well, that was the first and only time in my experience in eighteen years that I ever had anything of that kind brought up before the trustees or myself. It led to a practice like this:

Every Monday morning I issue one of these blanks to the teachers in the school room and one to each foreman of the shops, and I have a monitorial book like this, with the boys' names in it, and one for the girls with their names in it, with a column for each day and then a column for this kind of operation (indicating washing and combing), I mean to say the condition of the head and the manner in which they keep themselves personally clean; and then I have a column for general remarks. The monitor has charge of this book for the week. He has instructions from the superintendent as to what he shall do. If the monitor or monitress sees a boy or girl on the play ground, in the street, in the dormitory, or anywhere out of the presence of a teacher or officer, doing any thing that is improper, the monitor, or monitress calls attention—"My friend, that is not right; you'll be reported, beware." A second warning follows, and if that is not sufficient down goes a mark on the monitor's book, and that comes in due time to the superintendent's office. The monitor is not allowed to strike. Excuse me if I say right here in this connection—all of you, I suppose, know—that the public at large are very sensitive as to anything like severe, rigid, corporeal punishment; but anything of that nature towards these unfortunates is looked upon with more displeasure than it is in the public schools, and some of our States say we must have no corporeal punishment at all; and you superintendents and principals know that it is a comparatively easy thing to turn the crank and send the boy home and so shut him out from the care and training of the institution, but it is a very—"cruel," shall I say?—a very hard thing to do, for the child and the parents, and

I might say for the State whose best interests we are bound to subserve. This ironclad system, without any feeling, without any sympathy in it, that grinds out a boy and sends him out into the world with a cloud over him, is a pretty hard system, and we ought not to do this unless it comes upon us as a plain bounden duty, one we owe to the institution as a whole. Now, then, how shall we inflict proper punishment and how shall we avoid expelling a disobedient, wayward child? How shall we do it, and bring the thing down to as fine a point as possible? This monitorial book has its place. Then these blanks that are distributed every Monday morning to the teachers and foremen of the shop, what report do they bring to the superintendent every Saturday afternoon? After the school work of the week is done, after the industrial work of the week is over, these all come into his office. Now the first name I find here is perhaps John Smith—Monday, Tuesday, Wednesday, Thursday, Friday, has been to school and is marked perfect; there is his progress, estimated by his teacher, and there is his behaviour as set down by his teacher. Understand that in setting it down it runs from zero to ten, ten being perfect and zero an utter failure. Now, that is the school room. John Smith is in the tailor shop: he has been in attendance every day and his progress and his behaviour are marked ten, Now, I have seen John in the school room and I see his deportment in the industrial class, and then I look into my monitorial book and John has had his head combed, he has had his bath, he has attended to all the monitorial duties and he is marked ten. He has been ten in the school room, he has been there during every exercise, he has performed his duty satisfactorily to the teacher, he has done the same in the shop, he has done the same under the supervision of the monitor, and he is marked ten throughout. He belongs to the roll of honor that week.

In this way the superintendent has followed John Smith through the entire week. In the same manner he knows every pupil in school. And he has the testimony of four or five different officers on record at the same time. If anything out of the way has been done, the superintendent has it right there before his eye on Saturday afternoon. And so the record goes through the entire school year, and if ten or twenty years hence any of John Smith's friends come to inquire about him, and I have charge of this institution, I expect to be able to turn back here and from this book tell just what his standing has been in school, just what his deportment has been in the shop and whether he has been a good boy to take his bath and all that sort of thing; and I can form a pretty clear idea as to what John Smith's record was in the institution during his entire course of eight years.

THE PRESIDENT—Suppose, now, you take James Smith, does his record come up to that? See what it is.

PROF. NOYES—I am afraid I shall consume too much time.

MR. SWILER—You make that record every week?

PROF. NOYES—Every week, sir.

MR. SWILER—Mr. Smith is present, Mr. Chairman, and he says he would rather be excused.

MR. DOBYNS—I move that Mr. Smith be excused.

PROF. NOYES—Now, you want to know something about the record in that book. If you will follow my outlines here I will show you. There are three columns here, the first of which is headed "Physical Condition." Under head of Physical Condition comes bodily and personal cleanliness—head, bath and health. The general health of the pupil is made up from the report of his teacher, the officers, foremen and monitors, during the week. If he has attended every single exercise and been present at his meals and done all his duties, he is marked ten.

DR. MACINTIRE—Is there anything in reference to clothing and dress?

PROF. NOYES—No, sir; except under the head of general cleanliness and physical condition. This is physical condition, it is the condition of his head, bodily cleanliness and general health. Then next comes the class room—attendance, his standing, his progress, his behavior—making out what I would call the school-room or intellectual work. Then one other division, the shops, which is made out from his attendance, his progress and behavior; that is the industrial department. Then comes the monitorial department, which has reference to his behavior when he is not in school or in the shop; he may be in the dormitory, on the playground or in the city. And then comes the last division, which is made up from the three previous columns, and then you have his average for the week. And, besides, there is a special column for general remarks, explanatory of the whole when desired.

PROF. BELL—Have you any column for progress in articulation?

PROF. NOYES—No sir, but I have this; I have left the same blank for the articulation that I have for all the other classes, and the articulation standing enters into the general class standing.

Now, what is the fruit of all this? Understand that I am giving you just one week. Those reports come into my office Saturday about noon. Saturday afternoon is our afternoon for general visitation, excursions, etc. I run through the record of a boy that has been quite bad during the week, just after dinner. He sits in my office until his turn comes. The understanding all through the school is, "If I have done wrong, if I have made a serious mistake, the superintendent is ready to see me at any time in his office during the week." Any time a boy gets into trouble and has a difficulty he is welcome to come to my office and see me. Now, if a boy or girl has found that on Monday afternoon he or she has had a quarrel — got into trouble and got marked, he knows when Saturday morning comes the superintendent will call him up for it. But he knows this, also, that if he will voluntarily go to the office privately and talk it over with the superintendent, he will adjust the difficulty very easily. But if the boy says, "No! I won't do it!" Saturday afternoon he sits in the office till his case can be properly attended to. Then, when he comes to explain the difficulty, the other boy involved in it has the same privilege. Take each boy by himself alone, and then if their stories do not dove-tail together — "Face to face, young men, and now give each the opportunity to see both sides," — and sometimes they say, "We have made a mistake; excuse us, and let us try again." In such cases it often is true the punishment has already been accomplished, — in nine cases out of ten, perhaps this is so.

THE PRESIDENT — More than that.

PROF. NOYES — It may be more than that. Boys and girls come to my office privately and adjust their difficulties in just that way. I have seen a boy coming with a big tear just starting and say, "I made a mistake, so and so. I feel bad about it; can you excuse it?" Well, any teacher or any superintendent that sees the tear in a boy's eye will know that the object of punishment is already accomplished; exercise a little tenderness and kindness toward such, and the whole work is done and well done.

Now, suppose I have a very severe case. Well, here is one as severe as anything I have known: A boy gets hardened and braces himself up and says to himself, "Well, I wont think much about it," Saturday afternoon he comes in and looks at the pictures and fine things; I let him sit in the office and I will blindfold him a little while, perhaps, I will keep him from looking at those things in the office, and now he cannot hear, he cannot talk, he cannot see, and he has to meditate. But suppose that does not accomplish anything ; then one other thing. As I told you, on Wednesday evening, I believe it was, this institution was built for the deaf-mutes of Minnesota—it is their home—where they come to get an education, and of these little arrangements and these little inviting things inside, the children have their share first. The first money that was ever expended for anything with which to beautify this building was to benefit the deaf and dumb. Fifteen dollars was put in the dining-room for pictures for them to enjoy, and just so with the pictures in this room. Now, we add to these things, once a month, during our regular term, beginning in October, what we call a pupils' sociable when the whole household comes together and we have a family gathering or a family "break-down;" boys and girls put on their best clothing and come together and have a good time. We regard the institution as a family, we want to keep up the idea of a family, we want to make it in its details and its management a Christian household. Now, what about the sociable? Well, sometimes, if a girl or a boy has been pretty rude during the week, has neglected his lessons and has got marked, and seems to be very bad, when the bell rings in the evening for the sociable, Saturday evening, the superintendent goes to the naughty boy and says, "Young man, I am sorry for you, we are going to have a very happy time this evening, but I must ask you to go to bed;" and the superintendent usually tucks him up in bed himself. As a rule that boy would prefer to be flogged and allowed to join the sociable. And this is about the severest punishment we have to inflict; and I am thankful to say that under this system—this family arrangement, and this adjusting of one thing to the other has prevented almost entirely the use of the rod. I do not say that I never will use the rod, but I mean to say this, I never use it except in the very extremest cases, when I think it is just as much my duty to do it for a boy, for his salvation, (I mean for his salvation as far as education is concerned), as it would be for me to urge him to take food when he is hungry.

In one instance I had a fourteen year old boy that I felt it to be my duty to flog. I said to him, "I am sorry for you; and now, to show you my sorrow, I will take half of the strokes and you will take half." And when I made him understand that I was about to punish him, he swelled up and became as stubborn as a mule, and at first I made no more impression on him apparently than I would if I had struck the floor. I saw it. I rolled up my sleeve—took my coat off. "Now," said I, "take the strap and strike me; I'll take that because I am sorry for you." He raised the strap to strike my hand and broke down; he broke down completely. The object was accomplished. That boy went through his entire course of eight years, and he never troubled me after that. I give you this illustration to show the discipline we try to carry out; and it is one thing I glory in that I have never expelled a boy from the institution; I have never asked our board of trustees to expel one; I have had teachers and officers say I ought to do it, but I have never yet regretted that I did not do it, not in a single instance. I have suspended two for a short time—that is the nearest I have ever come to it—and I do think that the proper government and the proper discipline of children in institutions of this kind are matters of very great importance. It has a great influence in determining the kind of character we are going to develop in those children, and the kind of citizens we are going to send out into the State, to be a return for the investment—I was about to say the magnificent generosity of the people in helping to build these noble institutions and to sustain and keep them in running order. We ought not to lose sight of this question, whether we practice the oral, aural, sign, or combined method. The citizens of the State take note of our results, and we cannot ignore them.

The roll of honor, as we call it, is a great help. Those that are perfect during the entire week belong on this roll. The pupils who are on the roll of honor have their names written on a large slate in chapel every Monday morning, so all can see them. After I have conducted the services in chapel in the morning I open this record book. The roll of honor for the pupils is on the large slate. I say, "I am very glad to find so many names here to-day. I miss some that I hope will be there next week." I simply add any boy whose name is not there, if he would like to know why, may raise his hand. Perhaps a few show their hands, and an explanation is then and there given. And the result is that at the close of the term on the tenth day of last June, we had, out of one hundred and thirty pupils, thirty-eight who had been perfect thirty weeks out of thirty-eight, and six had been perfect every week in the entire school year. This talk has been quite at random, but I trust it has given you an idea of the government and discipline and the monitorial system as it is employed in this institution.

MR. HAMMOND—I want to ask Mr. Noyes just one question before he sits down, with reference to this matter of taking care of pupils who have done ill when they avail themselves of the opportunity to come to him for confession: What do you do with those "scientific" pupils that you sometimes have? You know sometimes you have some sharp pupils that pride themselves on their ability to *confess;* they are splendid confessors,—when they have been caught; they never confess unless they think they have been caught, but just as sure as they think they have been discovered, they do, as they say, "Allow to tell it first." What plan have you found most successful with them?

PROF. NOYES—Well, I find that after about thirty-two years of experience I can read a boy pretty well in a little while by a few leading questions. A straw will show how the current runs. I know there are some such cases as you refer to, but if there is a sincere confession, if that little pearl runs down the cheek there isn't much doubt about its genuineness, and you will find out by careful examination. There is where the skill of the superintendent or disciplinarian comes in. The disciplinarian should *feel* of a boy until he finds a soft spot, and then cultivate that spot. Mr. Wing one day made a very significant remark. Parties had written to me for the by-laws of the institution—surprised that we hadn't any—he came around and said "Why, Mr. Noyes, send your photograph, that is all that is necessary."

THE PRESIDENT—The next order is the consideration of certain interrogatories, which will be read by the secretary.

THE SECRETARY—The first question is, "what plan should be recommended to boards of trustees and legislatures in providing increased accommodations for the education of deaf-mutes?"

MR. AMASA PRATT, (of Columbus, Ohio, Superintendent Institution for Education of Mutes)—Mr. President, our institution in the State of Ohio, numbers something like four hundred pupils in regular attendance. There are something over four hundred more children in the State of Ohio between the ages of five and twenty who ought to be in such a school. I am anxious to see some provision made for them. The board of trustees, and I think many members of the legislature of the State of Ohio, desire to know what is the best means that can be adopted for increasing our facilities for the accommodation of pupils. I will make some suggestions in the hope of receiving the views of the Conference upon them. And, first, shall cottages, if feasible, be erected upon ground in connection with the main building, or if our area be limited, shall we seek at some point near our main building ground, and there erect cottages, and have all under one management? Second, shall we divide the State into two parts and require the pupils from one part to go to our institution, and from the other part to go to the other institution? Third, shall we establish in the neighborhood of large cities primary schools, and gather from these various localities the younger children, and make that a primary department, and then after three or four years of instruction, transfer them to the mother institution? Fourth, shall we establish an aural and an articulation department and and so relieve our main building of a portion, making room for these children who are to-day deprived of the privilege of education? To me it is an important question, and while perhaps others do not feel its importance, I wish, if anyone has any light to throw upon the subject, that he would help us.

DR. MACINTIRE — Mr. Chairman, I just rise to say that those are propositions that no one can answer in three minutes, or in ten minutes, or give any intelligent view upon, and I think this is not the place for us to furnish plans and systems in detail; we have not the time now, and while it would be very gratifying to Mr. Pratt to have suggestions — and there are a great many here that could give him valuable information — I think that it would be impossible to give any satisfactory plans or courses of procedure in that respect.

PROF. BELL — Mr. Chairman, this is a question of grave interest to the country as well as to each particular State. We have 17,000 deaf children in the United States to-day between the ages of five and twenty-one, and there are little more than 7,000 in our institutions. It is probable that some of those who are not accounted for have already passed through our institutions, but it is evident that there must be in this country nearly as many deaf children of school age, growing up without education, as there are in all our institutions and schools put together. It is a very serious question to know what to do with them, and we cannot settle it in three minutes.

One point that has struck my attention is this, why do not those children go to school? Their parents want them to live at home; the love of father and mother will retain a child at home even in ignorance. Now, I think that a State and a people have a right to demand the compulsory education of deaf children, but no man and no people have a right to demand that a child shall be taken away from its own parents without their consent. I would suggest, Mr. Chairman, that we establish day-schools where children may live at home and attend school, in as many places as it is possible. If this country were dotted over with small day-schools the present institutions would be sufficient to accommodate the children who could not attend the day-school. I am opposed to an increase in the number of our large institutions. They are doing a good work, I know, but it is a matter for grave consideration as to how far institution life promotes the association of deaf-mutes with one another in adult life and how far their intermarriage tends to increase the number of the deaf and dumb. I have already stated in my paper that 215 deaf-mutes, who are themselves the children of deaf-mutes, have already made their appearance in thirty-five of the fifty-eight institutions of the country, and twenty-three institutions have made no returns. The average per capita cost of educating these children in the United States is $223.28 per annum. These children will remain in school for at least five years, so that this country has already expended or is expending about $300,000 in the education of the deaf-mute children of deaf-mutes, and the numbers of such children are increasing in a greater proportion than the total deaf-mute population. I would recommend to the serious consideration of this Conference and to the teachers and friends of the deaf and dumb, a new departure in the education of the deaf and dumb. I would bring together deaf children in as small numbers as practicable, in close association and affiliation with hearing children in as large numbers as possible. I would separate all the deaf from the hearing as little as possible; I would separate the teachers of the deaf from the teachers of the hearing as little as possible. I would advocate the establishment of deaf classes in our public schools, and set apart in a public school building a small room and gather in it the children that can attend that class or the day-class with a special teacher to the class. It will be a matter of economy. The State can afford to provide a teacher to a town or village that could give only so small a number as four deaf children. It would cost no more to give a teacher to those children than to send them to an institution.

DR. MACINTIRE — Wasn't that system tried in Prussia?

PROF. BELL — I am not aware of what has been done in Prussia. I have established, myself, a school of that kind in the city of Greenock, Scotland. It was established as a private school by four parents. They had a class of four children; and I sent them a teacher from America, and those children made friends among the hearing children. It promoted the study of articulation. I went up there two years ago, and they were not deaf-mutes at all. The board of education of the city of Greenock has adopted that school as a feature of school education; the school started with nine deaf children and they now have twelve pupils, and the school board are now establishing a similar one in Glasgow. There is a great fight over it in the newspapers, and I have received, within the last few days, the petition of the parents of deaf children in Glasgow that the school board open a day-school like that established in Greenock for the education of the deaf children.

If you can bring together ten deaf children (which is about as many as one teacher can conveniently handle) a great economy to the State is accomplished. I do not know what you pay teachers, but suppose you pay a salary of $800; it is evident that the expense to the State is less than if they were sent to an institution. In the second place, the advantage to the pupil is greater the smaller the school, for each pupil can get more individual attention from the teacher. There are very many small villages where a deaf class of four children could be established, and you could afford to pay a teacher a salary of seven or eight hundred dollars. There are places in which deaf children could be brought together and the State could afford to give them a teacher if the parents would meet half the expense. In large cities where you have fifty or sixty or seventy or eighty deaf children who could attend day-school, you can grade them.

The President—There are eight of these questions to be considered within three or four minutes.

Prof. Bell—I do not wish to take up the time of the Convention.

Dr. E. M. Gallaudet—I do not wish to take any time, but I desire to state, for the information of those who may not be familiar with the subject, that many members of this Conference, I know, are aware of the fact that this so-called new departure of our friend Prof. Bell with reference to the association of deaf classes in ordinary schools of hearing and speaking people, is not a new departure in the world, although it may be an attempted new departure in this country, and even in Scotland.

Those who are familiar with the literature of our profession need not be reminded by me that in France, during a period of many years, under the advocacy of very eminent men, such attempts have been made, and found to lead to unsatisfactory results and to be practically given up. The same may be said of Germany and of some other parts of Europe. I take no more time than merely to direct attention to this fact: that this proposed solution of the question presented by our brother Pratt is not a new proposition in the world, although it may be new in this country; that it is a proposition which has been urged, it is a plan which has been tried in other countries and found wanting.

MR. PRATT—Well, in some places, for instance, say in a large State like Ohio, whether or not you think it would be a good plan to have two separate institutions or to endeavor in some way to keep the education of our children under one board of trustees and under one management?

DR. E. M. GALLAUDET—I should like to express the opinion, Mr. President, that it would be well to have two separate institutions. I think a very good solution in the State of Ohio would be the establishment of another institution, although I am perfectly aware that our brother Pratt is capable of handling an institution of 400.

THE PRESIDENT—I would like to have the system of Prof. Bell adopted by the great State of Ohio in the primary work in some department of the public school, and then send them up to Columbus.

DR. MACINTIRE—Mr. Chairman, I just want to say that I have been connected with large schools, and I think if there are pupils enough in the State to make a school of over 250 there should be a second school established, and if there are 300 there should be a third, and so on. Two hundred and fifty will justify a proper classification, proper organization and course of study and training teachers; but I do not think the best results are attained in very large schools. That thing has been tried in the State of New York; they went on the principle of having the largest school in the world. Dr. Gillett has exceeded that, and his school is now the largest in the world. But in a State like Illinois or Ohio I think they might very well have three if not four schools. If you want to reach all of them, in a compact State like Ohio, where it is central and easy of access in all parts to pupils and friends, I think in the western or southwestern part they had better have a separate school.

The President — I would like to ask the chairman of the business committee whether it is settled that you are to have an afternoon session or not, because the moment of adjournment is just at hand, and there are eight more questions here, and this one does not seem to be more than half through.

Dr. E. M. Gallaudet — Mr. Chairman, the business committee will not attempt to dictate to the Conference as to what it should do in regard to its sessions. If the work of the Conference, as it goes forward, develops into such proportions that it cannot be restricted into the limits which have been expected by a good many members of the Conference, it is for the Conference itself to determine whether they will go forward and take more time for the consideration of these subjects, and if they do, what time. The business committee feel that they are hardly authorized to become responsible for the limitation of discussions; it is for the Conference to determine.

Mr. Swiler moved that the Conference adjourn to meet at half-past 2 p. m., which motion was seconded.

Mr. Crouter — I wish to state, Mr. President, in regard to this question, that in Pennsylvania the question has been solved by the erection of two institutions, one at Philadelphia, and the other in Western Pennsylvania, under Dr. MacIntire.

A Member — Is there not a day school at Scranton?

Mr. Crouter — There is, but that is not an incorporated school. We found that our school in Philadelphia was becoming too large. There is also an oral branch in Philadelphia in addition to the large institution. Our institution in Philadelphia was becoming too large, the members exceeding something over three hundred, and we did what we could in our institution there in Philadelphia to aid in the establishment of a separate school in the western part of the State. I must say, however, that I agree with Prof. Bell in his idea concerning small schools. The very best school for deaf-mutes is a small school; the best of all is a school of one. ["Hear, hear, hear!"] Parents can not afford to have such schools. The next best is the very smallest school that can be established and maintained efficiently.

Cries of "Question!" on the motion to adjourn.

The motion to adjourn to 2:30 p. m. was then put by the presiding officer and carried.

AFTERNOON SESSION.

The Conference assembled at half-past 2, and discussion of the question under consideration at the time of adjournment was resumed.

MR. DOBYNS — Mr. President, I would be very glad if Mr. Pratt, of Ohio, would explain to the Conference what he has just explained to me. I think he has a very nice plan there, and a very feasible one, and one that I think would strike all of us as being a very good one, and I would ask Mr. Pratt to accommodate the Conference and give us that little explanation.

THE PRESIDENT — Mr. Pratt, will you comply with Mr. Dobyn's request?

MR. PRATT — Mr. President, I had simply suggested that my idea was, if the point of economy were a primary consideration, as our central building is located in the city, and as our lands are a great consideration, that instead of attempting the erection of cottages on this our present site, we have a line of cars that runs right out to the city limits, we should secure, if possible, a strip of land of sufficient size, say of fifty or seventy-five acres, and that we should begin, in a small way, at first, the erection of buildings here that would take some fifty children out of our main building. That we should have a good housekeeper, a competent teacher or teachers, and have a little family out upon this ground, and then we shouid be able to keep cows and furnish not only the milk for themselves, but for the institution proper, and we could raise all the vegetables on this ground that we should need for both places. Then the whole establishment could be under the control and direction of one board of managers, and could be provided for by one steward; and as we should have only the younger children at this institution in the suburbs, we should not need all the shops, but from the shops we already have upon the premises, we could furnish the older girls another room, and the boys in the shop could furnish the younger children with what they should need. So we could make one help the other, and it would avoid the friction that sometimes occurs if you attempt to have a primary school and have it under separate management. I know very well how it was with myself as a teacher, and how it often is with other teachers. If I have a class of bright, intelligent pupils, I like to hold on to those pupils, and I find that teachers are human and that there is a good deal of that feeling. Now, if we have this under one control, the examining committee can decide when these children are fit to come into the main building and so the thing can be arranged that these children are transferred to the main building as fast as they are competent to take up the work we propose to carry on in this building. Then, as I suggested, if we find in our main building that there is quite a large company that ought to be in an articulation class and that it would be a good plan to separate them, we can have a little building that will accommodate say forty or fifty of that class and we can have them under proper instructors, and they can have, it seems to me, all the advantages that that kind of instruction can give. In point of dollars and cents, and to avoid all friction, it does seem to me that this is a feasible plan.

President Mott — You can't sell out the property, I suppose, there, in the city, — it is too large a building? Can't you get it insured?

Mr. Pratt — I think there is a feeling on the part of our board that there will be a time when that building will be sold, but perhaps that time has not yet come. Now, with an eye to this, if we could purchase a sufficiently large tract and could have an intelligent person take our idea of what might be done, and lay out the whole premises with a view to what the future could bring to us, we might have this as a whole, and when completed, feel that we had things arranged for the best interests of the institution; and if the day should come when this property could be sold to advantage, the whole thing might be transferred to the new site.

Mr. Hammond — Mr. Chairman, in our State (of Iowa) there is a Reform School for boys at Eldora, which now numbers in all about as many as we have in the institution for the deaf and dumb. It is carried on upon the cottage plan. There is a large main building at one end of a quadrangle; there is a shop at the other end; then you can picture in your mind half a dozen cottages on each side of this quadrangle in order to fill it up; and the supposition is that as they have taken care of two hundred and fifty or two hundred and sixty already, they can go on building more cottages and can accommodate there about five or six hundred. Of course the pupils in a reform school have to be watched continually; every day in the year they have to be kept there, and escapes have to be guarded against, they have to be watched as as closely, probably more so, than the deaf and dumb, who are not there all the year. But I apprehend if it is feasible to carry on an institution of that kind with five or six hundred inmates, (as seems to be considered) on a good-sized farm (they have some four hundred and fifty acres), there would be very little trouble in carrying on an institution for the deaf and dumb with similar numbers; and it is my impression that under the proper sort of superintendence, institutions running up to five or six hundred can be successfully managed. At present, however, there are perhaps only one or two parties that think the same way, and probably the majority of the gentlemen who have given this matter attention are in favor of smaller institutions; but of course the circumstances of each institution would vary the decision somewhat, and if there is plenty of land attainable, and if there is a good head to the institution, and a good board of trustees, it strikes me that five or six hundred can be successfully taken care of in one institution, on the cottage plan. But I am decidedly opposed to putting up any more caravansaries that are four or five stories in height, especially where the highest story is to be used for dormitory purposes. I am opposed to building any school houses exceeding two stories in height. In our State we shall separate our chapel from the school building something after the way it is done in the Wisconsin institution, that is, having the chapel in one story and the school room below; by that means we shall obviate the necessity of going up into a third story; and as we happen to have plenty of land I think it is the most advisable thing under the circumstances. We shall then have the school house off by itself, as the Illinois institution has, two stories high, capable of accommodating four hundred children, and a chapel capable of accommodating four hundred and fifty, with a gallery, and I think we shall find it more conducive to our own comfort than some other plan that might have been adopted. But I am inclined to favor the cottage system for taking care of a large number of pupils, and I see no great drawback to caring for four hundred or possibly six hundred, and by means of the cottage plan we can segregate and gather together those of suitable age, and keep them apart from the bad influences of others of any other class and preserve the smaller children from being tyrannized over and abused by the older ones, and at the same time give them the proper influences with each other when it is desirable and advisable to bring them together.

THE PRESIDENT—If there is nothing more to be said on this topic, or no questions to be asked, we will proceed with the second question.

The Secretary then read the next question upon the list, as follows: "How far should deaf teachers be employed in our schools?"

The President (after a moment of silence) — There don't anybody know. Can't *you* answer that, in a word or two, Dr. Gillett?

Dr. Gillett — Mr. President, I have spoken on a good many subjects, and I presume that the person who presented this question has some thoughts on it that he would like to express. Certainly, it is no advantage to any one to be lame, it is no advantage to be blind, and it is no advantage to be deaf. The same individual in the possession of all his faculties is more of a man than without any one of them; yet I am prepared to say that deafness is not an insuperable object in the way of the successful teaching of deaf-mutes for those who understand the language of deaf-mutes, and I am ready to say, from my own observation and experience and knowledge, that some of the very best teachers of deaf-mutes are themselves deaf. I don't say that that is true as a classs, but the same rules are to be applied to them as shall be applied to others; when they have shown that they have the capability and adaptability for teaching and that they succeed well, I think that they ought to stand on an equality with others in their opportunities for teaching.

I suppose the question is meant to be, rather, how far is deafness an obstacle in the way of the teacher. There are certain pupils who are brought to all deaf-mute institutions (as has been shown very fully by the discussions during the last two or three days) who have a degree of hearing — some, pretty good hearing. I was speaking with Miss Fuller to-day of one of her pupils I saw in her school last February, and she made reference to the same person in connection with a visit of a Mr. Stainer, from England. Well now, that young man, probably, has defective hearing, but if he could not hear as well as I can, I could not discover it. Miss Fuller says his hearing is somewhat defective; I expect it is. He will go into the common school and yet he has not been a success in attending the common school, but I venture to say that his hearing is fully as good, and better than that of Mr. Wing who has entertained us and instructed us so much with his invention during the last few days. Then, as with such cases as grade along down with still less hearing and still less hearing and still less hearing, until we come to those who have absolutely no hearing at all. Now, the impression seems to have existed that this hearing that is in the possession of many pupils who come to our schools for the deaf, is entirely ignored, and that our brother Gillespie is the first that has ever undertaken to utilize that.. Now, my observation is a little different from that. My practice and object has been, so far as I can, to place pupils who hear in classes of teachers who hear, and to urge the teachers to assign the desks of those pupils as near to the teacher as is possible, and where it is at all practicable, simultaneously to have pupils speak orally; and to have the teacher at the blackboard, while explaining talk to them orally. And we have some who are so far defective that this oral instruction can only be utilized to a partial degree, but so far as we can we endeavor to utilize that vestige of hearing.

Now, it has not been our practice, for years, at the Illinois Institution, to send out as deaf-mutes, and to graduate as deaf-mutes, those who could hear. I graduated a class of thirteen last month, and three of those persons were brought forward onto the platform and required, in the presence of twelve hundred people (our chapel will seat twelve hundred comfortably) and although they had not been trained in articulation to speak to a public audience, yet they were required to deliver orally to that twelve hundred people their graduating essays, and they were understood by some while by others they were not. Among those I think of now was a daughter of one of our former State senators, who has some hearing, and when she read her essay (or, rather, when she recited her essay), I said distinctly to the audience present, "This is not a deaf-mute, this is a person who has defective hearing. She is not a deaf-mute and never was, but at a certain date disease came upon her and her hearing was much impaired." I would not send such a person out as a deaf-mute. We have utilized her hearing, and I have always talked to her—I have talked to her orally ten times where I have ever talked to her once by sign. There was another young girl that lost her hearing, I think at about six or eight years of age. She was devoid of speech. She was required to recite orally to that great audience her graduating essay, and I stated what the peculiar facts it relation to that case were, and so of all of them; and I think this matter of hearing we have been utilizing in some of our institutions in effect and in fact, though a little different in form, and with reference to the same results, probably, that have been brought to our attention this morning by Mr. Gillespie.

Mr. Chairman, I shall deprecate the day, and I do deprecate now, that some boards of trustees seem bent upon it that no deaf-mute shall be a teacher in their institution, and I should be glad to hear a declaration upon the part of this Conference that if a deaf-mute can show himself capable of producing good results he ought to have the same chance and the same opportunity in our institutions that others have; and I maintain, Mr. Chairman, that we cannot take any other position with a proper respect for our own work.

MR. DOBYNS — You don't agree with Ben. Butler that a deaf-mute is only half a man?

DR. GILLETT — There are very few things on which I side with Ben. Butler. No, sir, I do not think a deaf-mute is only half a man; I think some of the best specimens of manhood I ever saw were those persons that we style deaf-mutes.

Now, Mr. Chairman, I apprehend that we shall take away from our pupils one of the most encouraging incentives to excel when we remove from them the influence of deaf teachers, and I think it is of great importance to have in our institutions deaf gentlemen teachers and deaf lady teachers, and we ought not to let them stand upon any other basis as teachers than those who hear and speak.

A gentleman came to visit me a few weeks ago — a trustee of another institution — who had got the thought in his mind that seemed to be almost ineradicable, that a deaf teacher could not successfully teach, and I took him to a room; said I, "Here is a class that never had any other than a deaf teacher, and I challenge you to produce any class that ever was taught by a person who can hear or speak, that you ever saw, where better results have been produced and brought about than have been brought about in the case of this teacher." That teacher is near my heart and all the children in the class are strongly attached to her, and I tell you that in some of the classes where there is such an attachment they do excel most remarkably.

THE PRESIDENT — There on the wall is the picture of a man who could not hear a word, whose memory is almost worshipped in this institution and by the graduates of this institution on account of the sweetness of his moral character, the faithfulness of his work. (Referring to Mr. Carroll, former teacher in the Minnesota Institution.)

DR. E. M. GALLAUDET — Mr. President, I should be glad of the opportunity of saying a word or two on this subject, for it is one that I have been called to meet and consider and have had my attention directed to in a variety of ways, and I am very well aware of the objection that is raised to the employment of deaf teachers for the deaf, that they cannot assist deaf-mutes in the acquisition of what my good brother, Prof. Bell, (who, I am sorry to see, is not here this afternoon,) calls "the inestimable boon of speech." It goes without saying that a deaf teacher cannot help a deaf child *directly* in the acquisition of speech; indirectly, he may put that child on the high road to the highest success in speech, *if* this deaf teacher, by reason of his own deafness and his own experience of some of the difficulties deaf children have to overcome in the acquisition of language, is capable of taking the deaf children under his charge and leading them along through the work of the acquisition of verbal language, (which, in my judgment, ought to precede in considerable part any attempt to give speech to the deaf,) then the deaf teacher may — if he leads his children along judiciously and carefully in this pathway where he must go to acquire verbal language, — then he may help him and put him in the way where he may be educated, his mind put in a condition to attain the best and most rapid results in speech. That, I hold, Mr. Chairman, is a sound position. I believe in the employment of deaf persons as teachers of the deaf in a reasonable proportion. I think there is a tendency, from a variety of considerations, to employ, perhaps, too large a proportion of deaf teachers in some of our institutions. That no one would deprecate more earnestly than I. Sometimes a penny-wise-and-pound-foolish economy has led to the increase of the deaf-mute teachers in some one institution out of all due proportion, simply because those teachers could be had—the subject was so considered,—that they could be had at rates of compensation lower than those of equal capability who were hearing and speaking persons. That I should regret very much to see allowed in any institution. But, where the proportion is properly preserved, in my judgment deaf teachers may be employed with a very great benefit in the whole aggregate of results and instruction. I have known deaf teachers, many of them, who by their works have been proved to be as efficient and successful teachers as any that have ever taught.

I think, furthermore, Mr. President, that in the consideration of this subject, however much we desire to give speech to the deaf, we must not, and we cannot, close our eyes to the fact that the deaf constitute a class in the community, they will continue to do so till that day, which my brother Gillett spoke of yesterday or day before, "when fishes swim the air," etc.; they will continue to have sympathy for each other, and, in my opinion, a system of instruction which shuts out the deaf from the deaf—that system, a system which embraces many methods,—of course if the older method were promoted until it became a system and no other method were allowed, why that, I say, would be a result that I should deprecate very much, for that would involve the entire removal of deaf-mutes themselves from the position of teachers of their class. And, in my judgment, Mr. President, it is eminently fitting in such a class in the community,—which is to remain a class, and which is and will be, in spite of all our endeavors to segregate and separate them in the process of education, they will remain a class, bound together by ties of sympathy which cannot be severed. I think it is right that those who grow up in that class, reach and obtain an education and are capable of teaching others of their class, should be not only allowed to do so, but should be encouraged to do so, and we should be glad to have them do so.

That leads me to remark, Mr. President, just in this connection, in passing, that we have abundant evidence that the deaf will continue to be a class in the community and will be bound together by ties of sympathy in spite of endeavors to segregate them; from the history of deaf-mute instruction in Germany, where no other method but the oral method has ever prevailed, we know very well that the deaf-mutes, having left school, form associations, hold conventions, communicate with each other, form various societies or aids for mutual help and the advancement of their mutual interests, very much as they do in this country, and that in spite of the method or system of instruction that has been used in that country, it assumes that deaf-mutes, having passed through oral schools, are in large part hearing and speaking people and need not have so much to do thereafter. It is proved, in Germany, that they do associate, and are bound together, by this bond of sympathy; and I feel, Mr. President, in that point of view, that it is desirable—it helps the cause of deaf-mute instruction in a way which I would like to point out and emphasize,—to have deaf-mute teachers. Deaf-mute teachers are very sharp critics—very good critics; they are interested in the welfare of the deaf and dumb and they are as quick as any other to detect humbug and to point out erroneous methods and to say when results fall short of what they should be, and, naturally, they have this special sympathetic interest in their class. And I feel, for these reasons, (and others which might be named if there were time,) it is a desirable feature of deaf-mute education as a whole, that deaf-mute teachers should be employed to teach deaf-mutes. I hold that there is to be in the future a large work done for the education of the deaf, which will not be oral work in any sense,—which will be quite distinct from that, —and there will be large numbers of deaf-mutes who will not be, and cannot be, educated orally, and for those, certainly, deaf teachers may be employed successfully and satisfactorily.

The question asks in what proportion, I believe,—may I hear the question again, Mr. Secretary?

The Secretary (reading)—"How far should deaf teachers be employed in our schools?"

Dr. E. M. Gallaudet (continuing)—To give an answer to that question directly I should say that the proportion in institutions organized as ours are, upon the combined system,—many of them,—that the proportion of deaf teachers should be kept below, certainly, one-half of the teachers; it never should rise above one-half of the teachers. Of course, circumstances might vary that one or two or two or three, depending on the size of the institution, but it never should rise to become a proportion like three-fourths or five-sixths or anything of that kind, but should be kept under proper restrictions.

The President—If there is nothing further to be said on this subject the secretary will read the next question.

Mr. Pratt—Mr. Chairman, I would like to say just a word on the question now pending. I think we all agree pretty well with reference to the matter. I think the great danger is that the proportion of those who are deaf may become too great for the best results. There are certain things in every department of work,—the primary, the grammar and academic, I find, personally,—and it is only a natural thing, everybody must find it,—that there are certain things that the deaf do not notice, certain things that never can be noticed except as we have hearing; for instance, we know that when the little children come into school there are certain habits that every one of them has—I wouldn't say every one, but that a large part of them have as they come, that need to be at once corrected. There is a gait, that those of us who have been in school remember well, and which we recognize at once [here the speaker indicated by shuffling his feet along on the floor]. The deaf teacher does not detect that, but the hearing teacher does, and at once sets at work to correct it. And so there are hundreds of things that have come to us by our sense of hearing, which we have never observed as having come to us except as we contrast the things that seem natural to us with the perceptions of those who are deprived of this sense of hearing; and so, as it seems to me, there are a great many things that the hearing teacher at once becomes able to impart to the young child which the person who has not hearing would not think of imparting.

Now, the difficulty that I find in my higher grade, as it is arranged now, is that I can not arrange the pupils as Dr. Gillett suggests. I am not able to put those who can hear, or those who can talk, in the classes of those who hear, and I find on the part of parents a feeling that their children ought to have the advantages that would come to the child through a person possessed of all of his or her senses; and while I would give the greatest possible facility to the deaf in occupying all these positions so far as may be, I think there are hindrances, as all have admitted, that can *never* be overcome, otherwise we might as well all of us be deaf. And I should say that a half in our schools, unless very judiciously selected, so that they could range all the way from the primary classes up through, so that they could alternate pretty regularly, would stop the wheels of progress in the very directions that have been indicated.

All of these children who have any hearing, or who have the power of speech, should be placed where every power they possess can be cultivated, as the tendency is with every child who can talk, if he is with a teacher who can not talk, to cease using the power that he has. "To him that hath shall be given, and from him that hath not shall be taken even that which he hath," is true, and very true, with reference to these children.

THE PRESIDENT — The secretary will read the third question.

The secretary then read the question, as follows: "Is it desirable to separate the sexes in the school-room?"

DR. GILLETT — I should say "No." (Cries, "No, no.")

THE PRESIDENT — Go on around, and then we are done.

DR. MACINTIRE — I don't wish to make a speech, Mr. President. I only desire to express an opinion, as the result of my observation, that the influence upon each class, I think, is good, under proper supervision. I am decidedly opposed to their separation in separate dining-rooms, and not meeting even in the chapel — having them separated, as I have seen them, and treating them as though they belonged to another race, almost. I think that is wrong in every way, and I am decidedly in favor of their association together under proper supervision and regulations. I think that the influence of each class upon the other is decidedly happy and for good.

Mr. Swiler—Upon that point I would like to ask Dr. MacIntire a question, in regard to what he may consider proper supervision of the dining-room when the different sexes are brought in contact.

Dr. MacIntire—Well, as the basis in a small school—and in some of the large schools that I have visited—the girls come into the dining-room on one side and the boys on the other, through two doors. They come in and they sit—say about eight or ten at a table; and we have, in our institution, one of the older boys at the head of the table, to carve; we arrange it as much like a family as can be; and one of the girls pours the coffee and tea and serves them, while the one at the other end of the table carves and helps those that are about him.

Prof. Noyes—Boys and girls at the same table?

Dr. MacIntire—Boys and girls at the same table; yes, sir. They meet together in the same chapel; the boys sit on one side and the girls on the other. Then they have their social meetings, where the girls receive the boys, sometimes, and sometimes the boys go to the girls' social meetings on another evening, and there they are under the supervision of some of the teachers and officers of the institution, and they are taught how to behave in company; and I think it is decidedly to the advantage of both classes.

Mr. Swiler—Dr. MacIntire, my question had reference to what official supervision is had in the dining-room and during the progress of the meal. What officers are there?

Dr. MacIntire—Well, the way we are situated now, the principal and those that board in the institution, the officers of the institution, (in one end) eat at the same time; but in other institutions the housekeeper or the matron or assistant matron or someone in turn has to be in the room that will see that they are properly served; and sometimes it is customary for a part of the pupils to be selected out to wait upon them—that is, in large institutions—and then *they* will be served after the others are through.

The President—The chair rules that this question is decided in the negative.

Mr. Crouter—I should like to inquire of Dr. MacIntire (and of others who have had experience in the uniting of the sexes in the school-room) as to whether he has found that there was not considerable interruption to the course of school-room exercises by the presence of both sexes. Is there not considerable communication going on between them?

DR. MACINTIRE — Not as much as there is with the boys alone. I have found not the slightest difficulty in that respect. In our method of instruction, they are placed all around, under the supervision of the teacher, and we have never found the slightest difficulty.

A MEMBER — In the same school-room do not the boys have a portion by themselves and the girls another portion, or do they sit around promiscuously?

DR. MACINTIRE — Oh no; generally there is a row of seats around, the girls occupy one side and the boys the other. Sometimes the boys sit on that side (if there are more boys than girls) with the girls. We separate them in the rows of seats.

A MEMBER — You don't put a boy and a girl on one seat?

DR. MACINTIRE — No, sir; no, sir.

MR. CROUTER — I am very glad to hear such a unanimity of expression in regard to this matter. In the Philadelphia Institution, and since I have been there, for the last seventeen years, it has been our custom to separate the sexes.

THE PRESIDENT — In the school-rooms?

MR. CROUTER — Everywhere.

THE PRESIDENT — Oh, you're old Quaker folks.

MR. CROUTER — In the school-room and in the dining-room, and, at one time in the chapel, the sexes were kept separate. This, however, does not prevent communication between the two sexes.

DR. MACINTIRE — Oh, no.

A MEMBER— It makes it worse.

MR. CROUTER (continuing) — And I am inclined to think that this keeping them separate adds to the number of the minor offenses which we have to correct. Boys and girls will communicate if brought together. There is one way only to prevent it, and that is to have a separate institution for the boys and girls. However, I think we shall make an effort to bring the sexes together in our institution in Philadelphia. I very strongly favor it myself — and —

MR. DOBYNS (interrupting) — I desire to ask the gentleman a question,—you are not married yet, I believe.

MR. CROUTER — No, sir.

THE PRESIDENT—I call the gentleman to order—that is getting personal.

MR. PRATT—Mr. Chairman, we have 400 children in our institution and they sit together in the dining-room, and in the chapel the girls are on one side and the boys on the other. In the school-room they are in classes. I hear no complaint; I think there is no greater difficulty in the matter of the boys and girls being together in our school than in any of our public schools. I would say, however, that I think there is this to be said, we must remember that these boys and girls grow up largely without the home training and the home influence. Our institution is their home as well as their school, and I tell our teachers that we are not only teachers but we are parents and ministers as well, for they must get their education, they must get their idea of home training, they must get very largely their moral and religious training in our institution.

Now, it has seemed to me it was possible, in our grammar or perhaps in our academic classes, at least for one or two years, to put the boys into a class by themselves and the girls into a class by themselves, a gentleman to take the boys and a lady the girls, and there are many things that boys and girls as they grow into manhood ought to know which a faithful father and mother would teach them, but the father and mother cannot do it, and now we as teachers stand in the place of the parent, and if a faithful lady had a class of these girls, that there are very many things which in the school-room she could teach them and could tell them of the right thing to do and of the wrong thing to avoid, and that we might in very many instances give boys and girls, before going out from our institutions, very many things which perhaps many of us wish, as boys and girls, we had been taught to practice. It seems to me that there may be a point there that it would be well for us all to observe.

DR. MACINTIRE—I forgot to mention one thing. Now, in all these institutions that I have referred to, the school-room is a place for recitation. During their study hours, during their work hours and during their social relations, there are always ladies with them and they are teachers in these respects in the school-room. When they go to the chapel, of course they sit separate and there is no temptation particularly to inter-communication there, but when they get in, they recite their lessons, and then in their study hours in the evening they are under a lady and under the care of the matron or assistant matron (or supervisor who is a lady)—they have that home influence in there the same as other children, who go to the common school. They go from their home to school, they recite their lessons there, they go home and study their lessons and they learn these things I have referred to, under the teaching of ladies. And then in all the institutions, (it was not so formerly,) there is now a full proportion of lady teachers and they have an influence upon these boys and are better to govern them, probably, than the gentlemen teachers, that is, the young boys in their classes. And the two sexes together,—becoming acquainted with each other—I think that a school would be a very deficient one which had not some lady teachers as well as lady officers in the institution, that is, a school not composed of males and females.

THE PRESIDENT—We will pass on to the next topic, "How best can friction be avoided in arranging classes in articulation and sign classes?" If it is necessary to avoid friction, will somebody tell us how? (A pause.) If there is nothing to be said, we will pass on to the next question.

DR. MACINTIRE—Mr. President. If there is no one else to speak upon this question, I will say just a word. It depends upon whether you teach *by* articulation or teach articulation. The custom at first was, some years ago, to withdraw from the classes the semi-mutes and for an hour put them under a teacher of articulation, but latterly they select these pupils and form them into a class, and not only teach articulation, but they teach *by* articulation; they make the mental development and the use of language the primary object at the same time they are teaching them to articulate.

Now, I have been trying two classes this last year. I took a small class of semi-mutes, and the object has been for four hours a day to teach them by articulation, and I have had another class of semi-mutes who are somewhat advanced, in different degrees, in different grades (for our school is not very large), where their lessons, their recitations were altogether by signs—in fact part of them are under deaf-mute teachers—but they spent about an hour a day where the object was to train them in the use of the voice and in lip-reading. Well, I must say in the class of semi-mutes, where they were taught by articulation, and not excluding to some extent signs, aiding articulation by the means of the alphabet and by the means of signs (natural signs)—that this class made, I think, as good improvement, if not better, than those that were taught altogether by signs—this class in articulation; and I am encouraged so much that hereafter, when I find a sufficient number to form a class, that I would put in over that class a teacher of articulation and a teacher that understands the system of sign instruction, that is, I mean that signs shall supplement articulation. I have found from a year's trial with this class—

THE PRESIDENT (interrupting)—The question here is, "How best can friction be avoided in arranging classes in articulation and sign classes?"

DR. MACINTIRE—Well, I was just explaining how it can be avoided, and what has been the practice. It has been the general practice to withdraw them. That creates confusion with the other classes; then take up some subject in the place of that and recite that and study that in the class while these are absent from it; it is to avoid that friction, and I think it the better plan (I want to state that as my conclusion) to select those and put them under a class and teach them separately rather than interrupting the exercises of the other classes by withdrawing them from this class one hour or a part of it, and so on during the whole day. It is neither flesh nor fish, it is dividing their attention too much; but where you have them in the same class and under the same teachers, that understand both systems sufficiently that they can avail themselves of these two systems—the system of articulation and of sign teaching, and facility with the manual alphabet,—and I lay great stress on that, they should be familiar with that so that they can spell rapidly and distinctly and that their pupils can understand them,—then I think that is the best plan in a school where there is a sufficient number of pupils to justify it.

MR. PRATT—Mr. Chairman, I think the friction perhaps that is referred to is just that which Dr. MacIntire speaks of; in some of our institutions, certainly, the classes are formed and taught by the sign method; then the pupils are taken from these classes at certain times of the day and put under articulation teachers. This necessarily causes some friction and confusion. The articulation teacher, for instance, will say, "The pupil is eight minutes late this morning," and instantly I am expected to remedy the difficulty. The sign teacher comes and says, "I sent the pupil out right on the minute;" the teacher is ten minutes late in getting back, and then I am expected to correct that, and so it goes from day to day and week to week. Now, I had hoped that there was some one here who had succeeded in arranging some way to have these pupils taken from the classes, and if not so as to entirely avoid friction, to reduce it to a minimum; and if there is that person here, I myself as well as, I think, some others, would be glad to hear from him.

MR. WESTERVELT — Mr. Chairman, we have succeeded, I think, in making such an arrangement. When our school opened I wanted to have articulation form an important part in our work; I accordingly divided the recitation hours so as to give a certain time for each exercise. Then the pupils were classified, and those who could work well in articulation made the class, and the number of teachers that we had at work at that hour was given each a class that belonged to them for that session. At the end of forty-five minutes the classes were changed; at the end of the recitation the classes all changed. It took two or three minutes for the change, but the loss of time in this changing of classes I think is fully compensated by the life it gives the children to move about, who are quiet during the time they are at their class room work, and there is no particular class that belongs to one teacher. A teacher cannot say "My pupils have to be taken out for articulation, and consequently they are losing so much arithmetic or so much geography;" each pupil gets his full apportionment of study and goes to his teacher at the time that his class is called. And we also divide the day into three sessions — the Ohio system, then again divide each session into forty-five-minute sessions; and we have found this to work very satisfactorily. I think that this system is also in use in Frederick, Maryland, and a very similar arrangement is adopted in Northampton, I believe, where the pupils are drawn out for the articulation classes — the special articulation classes.

MR. WILLIAMS — I have had some difficulty in this respect, and it seems to me the very first requisite to avoid friction is to secure very amiable teachers, who will bear a great deal and not be too easily excited at a little irregularity or disturbance. And then, another way we have tried to avoid this friction is by having, so far as we can, the articulation come out of school hours. We arrange in this way: we have two teachers of articulation, and all the pupils that have articulation are divided into four classes for lip reading purposes. We have the articulation and lip-reading at distinct times. Of course they run into each other — that is unavoidable — but for one-half hour the time is given especially to articulation, and the other half hour is given especially to lip-reading. The lip-reading classes are large and all the pupils being divided into four classes, they come between eight and nine o'clock, and each teacher has two classes; the children come out of the shops at that time,—the loss there being of less consequence than it would be to lose their time from school,—so we avoid friction in that way. When we come to the time that the children have to be taken out from their school, we try to avoid breaking into a class more than once. The children are not classified in their articulation as they are in their studies. Two pupils, in their general development, may be classified together, while they may be widely different in their attainments in articulation and lip reading. And we try to arrange it so that all the pupils that are in one class may come out at the same time, going to one or the other of these two teachers. We try to get all the articulators of any one class out at the same hour. Having two classes, we are generally able to arrange that.

DR. MACINTIRE—How do you do, then, if you have those recitations afterwards? Would it not interfere with the shops and manual labor department?

MR. WILLIAMS—Well, that is a comparatively unimportant matter.

DR. MACINTIRE—I think it is next in importance to intellectual culture.

MR. WILLIAMS—They are not working together, as a class, in the shop, and if a boy comes out from the shop, he goes back and goes right on with his work and does not disturb anybody else. If the class is broken into by the teachers teaching along regularly and introducing new principles, when a pupil is taken out he don't want to go over any new ground, because when he comes back he is all "at sea," and if the class is broken into every two or three half hours it creates confusion and loss of time, but, all being confined to one half hour, we get along very well.

DR. MACINTIRE—If he is a half hour late in the shop, and somebody else has got his tools, it makes the same disturbance there.

MR. WILLIAMS—That is not so serious a matter, however.

THE PRESIDENT—The next question is, "Is divided authority and responsibility in an institution advisable?"

DR. E. M. GALLAUDET—Mr. President, it is always a matter of a little surprise to me when that question comes up in conventions and in conference; it has come up a good many times, and I have wondered, occasionally, whether there is prevalent in the minds of any considerable number of people the idea that the old proverb "Two heads are better than one if one is a sheep's head," can be applied successfully in the management of a public institution. I do not want to speak at any great length on that question, but I do want to express, as I have before, on a certain occasion, my very decided opinion that it is against the nature of things to expect the best success in the management of such an institution as one for the education of the deaf and dumb with a double-headed arrangement. The thing of first importance in the management of an institution is that the board of directors (which I look upon as a body mainly legislative and not administrative) should secure the services of some person, be he man or be she woman, who can take charge of the administration of the affairs of the institution in all respects, and then that under that administrative head the various departments should be organized and carried forward. Where such an arrangement has been made carefully and a man has been placed at the head of the institution, or a woman, —for I have in mind one where, I understand, a good woman we all know, has managed very successfully for a good many years, —without divided authority, if I am not mistaken, that arrangement secures by far the best results.

I remember very well that I was very much frightened, a good many years ago, when I first went to take charge of the institution at Washington (I was hardly anything more than a boy then), when old Mr. Amos Kendall—who believed in the one-man power—said to me, a man of twenty, "Mr. Gallaudet, we are going to place that institution in your charge and give you entire authority there, to manage it, to develop it in all of its departments, and we shall hold you responsible, and if you don't prove yourself the right man, you'll have to step out." I was a good deal scared, Mr. President, but I "braced up," (to use an expression that was not common then, twenty-seven years ago,) and pushed ahead as well as I knew how, and, although I do not wish to stand here and make any boasts at all, I only think it is right, with, I hope, a becoming degree of modesty and some humility, to say that, with a strong dependence upon divine Providence, I have worked forward now for more than a quarter of a century upon that plan.

THE PRESIDENT—You are there yet, ain't you?

DR. GALLAUDET—I am *here* just now. I expect to go back again. In my judgment, the placing of large powers and authority on the shoulders of one, though he may not have all the wisdom and all the experience that is to be had in this world, is a source of strength to that man or woman. He or she feels that she or he has a responsibility, and if he does not know just what to do in a given case he will see to it that he finds out and gets good advice.

On this subject I will mention just another fact in my own experience which occurred a few years ago. I will give it for what it is worth. A very discreet friend of mine, when I went to take charge of the institution at Washington (this was after the interview I had had with Mr. Kendall when he gave me his ideas), after I had confided to my friend somewhat of my trepidation at having to bear so much authority, said: "Well, keep this in mind, when you are in any doubt what to do in regard to the management of your institution—what is going to be the best course—never ask the advice of one of your board of directors. Let one of your board of directors be the last man of whom you ask advice, if you are in doubt as to what is the best thing to do in the management of your institution that has been confided to you."

DR. GILLETT—Who was that?

DR. GALLAUDET—I didn't say who it was. And it startled me at first. I was very young then, and very green, but I have lived to see the reason of it. Not that I have not asked, on a great many occasions, the advice of members of my board of directors—I have done it persistently and constantly—but it was in regard to matters of great importance to the institution—*very* great, indeed—in regard to which they were supposed to know something; but in reference to the internal management of the institution *I* was *supposed* to know everything. My judgment was supposed to be infallible, and it was not to the board of directors that I should go for counsel and advice, but I would rather travel off to Illinois and ask my good brother Dr. Gillett what he thought of a knotty question in the management of the institution.

I think, Mr. President (not to dwell longer on this subject), that there can be no question but that a double-headed organism, to use a common phrase, is to be deplored and regretted. It may be sometimes necessary, there may be circumstances which make it necessary, there may be—I won't go into details.

THE PRESIDENT—What do you mean by the term "double-headed?" I don't understand it.

DR. GALLAUDET—I mean by that, sir, two officers charged with duties in the administration of the affairs of the institution each of whom is responsible to the board of directors.

THE PRESIDENT—Did you ever hear of such a thing?

DR. GALLAUDET—You must excuse me, sir, for using the common expression, "I should smile!"

THE PRESIDENT—I never did.

A MEMBER—Ask Mr. Walker if he ever did.

DR. GALLAUDET (continuing)—But such an arrangement is desirable at times for certain circumstances, and certain times it is possible, but greatly to be regretted generally. When you have given a person the head—that word, if you think about it a few moments, expresses a great deal—the power to direct, the power to restrain, the power to control, the power to advise, the power to employ, the power to dismiss, (and I use those two words, of course, with the understanding that there would be a qualification under many circumstances;) the head of the institution should certainly have the deciding voice as to who should be employed, he should not have subordinates thrust on him against his will by a board of directors. Then, when one is given the head, he wants, in the various departments, in the domestic department, some one who is capable of doing a great deal of management, not a mere dummy (I don't use that in any sense as applied to our deaf brethren), not a man that has no independence, but one who can take charge and who can administer, one who should be responsible to the administrative head of the institution. Then there may be a head of the industrial department—one who can manage two or three shops, perhaps—or one at the head of each shop. And so with the other officers and with the instructors, but with a single responsibility to one head. I have rarely heard, sir, of a physical organization existing in this world, not even that of the Siamese Twins, where two heads undertook to control one body.

THE PRESIDENT—I never did, either, until now. Mr. Secretary, will you take the chair a moment? Will you excuse me now, because it is not very often that you have a director, you know, that is willing to talk. [With this remark the president left the chair for the purpose of making an address.]

A MEMBER—Mr. Simpson wishes to make a few remaks.

MR. SIMPSON—If you will examine the Dakota laws concerning the government and management of the Dakota Institution, you will find one clause relative to the superintendent of the

Dakota Institution. The law reads: "It shall be the duty of the board of directors to appoint a superintendent, who shall be a man who understands the science of management." I think such a law as that would prevent a double-headed management in any institution. Almost anybody can be a superintendent, but not a principal. Such a law as that would prevent politicians and others who want to get into the superintendency selecting, for instance, some old teacher as principal, in order to run the institution to suit themselves. I had the law framed with the idea of preventing such a state of affairs taking place.

President Mott—Now, of course, there has been a great deal of trouble arising out of this question of the appointment of men, by boards of direction, who did not understand their business. As a rule, men are appointed on these boards, and these commissions, and these boards of directors, who know very little about this work. In the first place, the men who make the laws know very little about it. But, after all, the people create these institutions, and they have a right to make fools of themseves if they see fit—the legal right, I mean, no moral right; but what ever it is, we are acting under certain fundamental laws that are the expression of the people's will—supposed to be. Now, then, we go to work and organize an institution under the existing statutes of the State, or the statutes of the United States. I hold, in the first place, that a board of directors who are named, appointed and organized under that law should abide by law. That is the first duty—that they should abide by law. If the law is wrong, let them use their influence to get it amended. But it won't do to ride rough-shod over the law; we have got to abide by the statutes under which we live and exist. The people are not going to stand anything of that sort; sooner or later it comes back on them.

Now then, under our law, for instance (because that is the one I know most about), *we* are responsible. The legislature has said, "You make all laws, rules and regulations which are necessary to carry on your institution." Under that we make these rules. Supposing the first rule we make is that we will have a superintendent. Whether we have one or not the law does not direct—leaves it to the directors; but, of course, we know the necessity of having a head. Now, what shall he be? Shall he be simply the head of the school (if we appoint a man simply as educational superintendent, then all he has got on hand is to take care of the school), or shall he go one step further and be the head of the house, be the superintendent of the educational and the domestic departments? If so, then that is his duty.

Now, I hold that so far as he is appointed superintendent he should be supreme and take the responsibility; but because he is appointed superintendent of the educational department, does that mean that he shall be the steward, or that he shall control the steward, or that he shall be the farmer and control the farmery? Does it? You have got to go back to the law. Now then, we say that he shall be the superintendent of the educational and the domestic departments. So far so good. Then we go one step further and say, "and of the industrial department." That is putting another duty in his hands, and just so far as he is made superintendent he should be supreme there. That was the point I had in mind when I asked the doctor if he ever heard of an institution where there were two heads to whom were assigned the same duties. I never heard of one. But there can be the head of one department and the head of another department, it seems to me.

Now, just suppose a case like this: We have three schools in one institute as our law has organized it. We appoint a superintendent of each; he is the superintendent of the educational, of the domestic and of the industrial departments, and he orders whatever he wants, but he gives his order to the steward, and it is none of his business, and he does not stop to inquire whether that steward goes down town here to get it filled or goes to Alaska. The moment he gives that order the steward is bound to obey that order, and he is responsible. So the steward is independent in his department. Supposing, for instance, Superintendent Noyes wanted A, and the board wanted B, and somebody else wanted C to do something as steward; under our organization, you see, we never could do anything at all. We appoint a man, and if he does not do as the superintendent tells him, off goes his head.

Now, the board of directors — who do not understand their business half as well as you do yourselves (I know that, I will admit it, and I have been taught what little I have learned by our superintendent)—have certain responsibilities, and the people have placed that responsibility upon us, and they have given us our money, and we propose to discharge that trust; and let me say, gentlemen, without your meaning it, (I have watched it for a quarter of a century,) you have said a great many things in the past that have been published reflecting on your boards of trustees, when, if we could just have changed places with you, you would have felt as though there were two sides to some of these questions. I know it, I don't specify anything, but of course you did not realize where we stood,—*bound to obey the law, sworn to obey the law, determined to obey the law*—whether these institutions stood up or fell down. That is the first thing we have *got* to do, as American citizens, sworn to do our duties,—*abide by our laws.*

Now, gentlemen, suppose your laws are defective; then use the proper means to get those laws amended, and do the best you can with what you have. With your defective laws and your poor ignorant directors, for mercy's sake do the best you can, and don't undertake to lord it over them and the people and the laws, for, if you do, you will come to grief, as I am sorry to see they have in many of these institutions, where there are political complications and you don't know what in the world is the matter. It may be something that you are responsible for. I say it with the greatest love for you and with unbounded love for the work; but there are two sides to this question. Excuse me for saying as little and talking as much as I have.

DR. E. M. GALLAUDET—I feel, Mr. President, as though I had done something that I ought to feel as though I was doing wrong in doing. I supposed the question which we were considering was one not as to how things were, because we all know very well how things are in different localities, how certain organizations are; it is not a question of what law is, (and I beg to assure the president that there does not walk the face of the earth a more earnest and sincere servant of the law than his humble servant,) I believe in obeying the law and in carrying it out to the letter; but when the question is what is the proper organization of an institution of the sort in which we now are assembled here, it is a matter that is open to consideration, and if, in certain instances, the laws under which boards of directors and administrative officers are acting are defective, I don't know who should (with all respect) better consider those defects and point out the best remedies for them than a body like this. We certainly have a right to say that we think a law under which we are acting and which we are obeying is not in the best possible shape for securing the very results that the law is designed to secure, and so if the president will allow me to disclaim any revolutionary projects or desires I will be very glad, for I should hate to rest under that imputation.

THE PRESIDENT—Dr. Gallaudet, I didn't say anything that was intended to be personal, but I talked a little as I try a case in court, I suppose, and I beg pardon for anything that may have been like personal reflection or personal heat; I didn't intend anything of that sort, it was my way of trying a law-suit; that's all there was of it.

PROF. NOYES—Mr. President, I think a simple statement or two will relieve us of a little of this misunderstanding. I was about to say that instead of a double-headed arrangement, or two heads on one body, we ought to have one head and one general management. If you go to work and divide a house and put two heads onto one body in that house, with an adjustment of all the domestic and all the disciplinary and all the school arrangements into one, and give equal power to those two, I think you are very liable to have difficulty; and I think that is the plan that my friend Dr. Gallaudet had more especially in view, whereas, our honored president had a little different idea. Now, we must bear in mind that the great object of these institutions is discipline and the cultivation and the amelioration of the condition of this unfortunate class. The question is not just who shall buy the supplies, or who shall drive the cows to pasture and supply the butter and milk, but who shall have authority over these children. When you come to divide up the responsibility and the labor of the house in such a manner that it is going to affect the moral training of the children, then you begin to affect a vital part. I do not think our president had any particular reference to that, but if the directors think it is wise for the superintendent or the steward to attend to three departments (as we have here), and they take their direction from the executive head of each institution, and these have the support of the trustees, that is a very different thing; but if you begin to draw a line in the management of the children which virtually says to a boy you may go so far, but don't you dare to step any further, and somebody else says you may go where you please, with such an arrangement you will very soon get into trouble.

Now, it is very dangerous to get two heads on one body. But, if the main executive head and the directors, agree that one man shall run the farm, and another man shall buy the supplies, and all contribute to the main point, the development and the culture and the training of the household, there is no difficulty. The point that the doctor had in view and the point that our president had in view, when you come to look at them aright, are quite different; but if you divide the house instead of uniting it you are very liable, in the course of time, to get into serious difficulty, and the development and care of the children will suffer in consequence.

MR. SHAPARD — Mr. President, the way I understood your explanation was about like this, that it is the business of your board of trustees, under the advice of the superintendent, to get all the necessaries to run this institution.

THE PRESIDENT — We ask what he needs.

MR. SHEPARD — Well, you suggest, I suppose, what is necessary?

THE PRESIDENT — Yes, sir; recommend.

MR. SHAPARD — And I understand you to say that the superintendent here made his requisition on the steward, and it was the business of the steward to supply or fill that requisition. Is that correct?

THE PRESIDENT — Yes, sir.

MR. SHAPARD — Well, I don't see, then, how the superintendent is tampered with in any way.

THE PRESIDENT — We hope he is not.

PROF. NOYES — We have always had enough, sir, to eat and to drink.

MR. MATHISON — Mr. President, I say it with all humility, but in my opinion, the board of directors ought to be abolished.

THE PRESIDENT — Ought to be what?

MR. MATHISON — Abolished.

THE PRESIDENT — Well, I think so, too. I will vote for that.

MR. MATHISON — I come from a country where we have no board of directors, and I think we get along just about as well as you do; in fact, I don't think we have so much trouble as you do sometimes. We are a law unto ourselves. The government appoints an inspector, who has the inspection of all the charges in the province; he makes periodical visits to the various institutions, and it comes our turn about twice a year. And we are always glad to see him, I wish he could come oftener. In our province the superintendent is supreme.

THE PRESIDENT — Who appoints him?

MR. MATHISON — The government appoints the superintendent. He is responsible to the government, through the inspector. The inspector comes and inquires into the condition of things, looks over matters and things in general, and he is the means of communication between the government and the institution and the superintendent. The superintendent has charge of everything in and about the institution; he has charge of all the employes, all the teachers and every one connected with it.

THE PRESIDENT — Does he appoint the employes and officers?

MR. MATHISON — The teachers are appointed usually — there is authority given to the inspector to employ.

THE PRESIDENT — Well, who appoints the financial officers?

MR. MATHISON — Well, but the "double-headed business" don't come in with the financial officer at all, as I understand it. The superintendent is the principal (that was really the question at issue),the superintendent is principal as well. In my institution I was superintendent and principal of the institution; the principal appointed by the government would not be responsible to me at all. After school was out he might order that a certain boy should do certain things, or that he should be under certain control, and all that, and if he were appointed by the government we would suppose that his orders were to be carried out. I, the superintendent, after school hours, having charge of the domestic department and all its affairs, might give an order to that boy that would conflict with the order given him by the principal. This is where it is,—that no two men can have control over the same people at the same time and under the same rule. That is the question as I understand it. We have not been troubled in that way.

I might give you a little illustration of the "double-headed" business that obtained in our institution for some little time,—it didn't obtain very long, however. We had a matron and a housekeeper; the matron was responsible to me and the housekeeper was responsible to me, but they were both independent of each other, and you can just imagine the good time that I had. I like the ladies particularly, but I don't like too many of them at one time. A little matter would come up, and the matron — well, I would think, perhaps the matron is responsible for this thing, and I would feel pretty sure she was. She would say, perhaps, "Well, I don't know — no, no, I am not responsible for that, the housekeeper has charge of that." Well, then I would send for the housekeeper, and she would say: "Well, I thought the matron had charge of that." Then the servants were divided up, one part of the help was under the matron and the other part under the housekeeper; and between them all I had my time pretty well filled up by trying to keep them straight. I confess it was more than I could accomplish. And in a little while I considered that it would be just as well if we had one head over the girls, to whom all the female help in and about the institution would be responsible. I can tell you that my life is much easier since we have had one head. I am in favor of a single-headed arrangement, especially in *that* matter.

As far as the finance is concerned (which is really outside of the question) I make a requisition on the bursar, and he fills it just the same as your steward. I don't care whether he buys the supplies down town or in Toronto, or where, as long as he gets them. I make a requisition on him and he fills it just as soon as he can, and we have no trouble in that way. The financial part of the institution is altogether separate from the administrative departments. I have charge of all the horses, all the vehicles, and all the people about the place. The financial officer goes to his office and he attends to and receives my requisitions, he purchases the supplies and sends them to the store. There is a storekeeper there, and when they come to the store they are checked to see that we get everything that is asked for, and I make my requisition on the store for those things just as I require them; the storekeeper wants my requisition as we get them, and that is the whole of it. We have no trouble about this board of directors coming around and sitting down and making a row because we have not got a box of cigars on hand, or something to keep them dry, as you do on this side.

THE PRESIDENT—The board of directors does not meet here.

MR. MATHISON—I didn't say you did, Mr. President, I didn't say anything of the kind, but I have an institution in my eye where I believe the superintendent or principal, or some of them, had to set out the whisky and the cigars at various times. We have no trouble where there is one head, Mr. President, in keeping good order; there is no necessity of our officers down there carrying revolvers, we don't keep order down there at the point of the revolver as I believe you do on this side. I believe I have heard of one or two such cases. And if you have one head,—if that institution had had one head, if they had had a superintendent there, he would not have been bothered by the board of directors. The trouble, I should think, was all on account of that board of directors,—they want to be the heads of the institution themselves, they are continually mixing in things that do not concern them. As I said in the first place, if you have confidence in your superintendent to run your institution, why, let him run it. If the man that is appointed superintendent is not fit for the place, is not competent to attend to the educational, and all the departments of the institution, why, just cut his head off and get some one who can attend to it, that's all. There is no trouble where there is one head. It is just the same as, and you all know it, that no house is large enough for two heads, no matter how angelic they may be, and there is no institution large enough to hold a superintendent and a principal at the same time, with one or two or three directors all wanting to have their say along with them.

DR. GILLETT—Mr. President, I want to say a few words in answer to some things Mr. Mathison has said. I agree with him in a good deal he has said, but with reference to some things he has said I differ with him. There are not many here who have had a wider or longer experience than I have in this very matter (Mr. MacIntire certainly has), and I want to stand here and say that some of the most noble and self-sacrificing men I have ever seen have been directors of institutions; they have laid the foundation stones, they have stood by the institution in days of its trial, they have carried it in their arms and they have nurtured it, and as it has come on to its days of importance and its dignity and power and influence and usefulness, they have been as proud of it as if it had been their own offspring, and *never received a dime of compensation.* I have had such men associated with me. Sometimes we have differed in opinion, but I do not think any the less of them for differing with me in opinion; and some of the most delightful consultations that I have ever had in my life have been with the directors and trustees of the institution with which I am connected. And I differ with my friend Mr. Gallaudet with reference to going to the trustees sometimes to consult in regard to matters of internal management. There are certain matters that come up in the administration of the institution, when we may often get the wisest counsel from these very men; and when appealed to I often find they are brought into a sympathy with me in the difficulties of my situation that they never would have attained to in any other way, and I have found it best always never to conceal anything from my directors, but to make the institution as open and as plain to them as it is possible, and let them know all about it.

The position of the superintendent of an institution of the deaf and dumb, when you have made it as easy as you can, is by no means trifling. There are innumerable perplexities, and these perplexities are coming up from fresh quarters anew almost every day; they are as various as are the different elements of human nature. But not only do they come up in as many various forms as the different elements of human nature, but the superintendent has got to be always ready for anything at any time; and usually, where the trustees of institutions are selected by virtue of their fitness for the position and not by reason of a return for a political service, (which I want to say, sir, is an abomination, and public educational institutions of this character, I say, ought to stand above politics; and I would as soon stand up and inquire as to the politics of the man that stands in the pulpit in order to prejudice me, as to inquire the politics of the person I am going to select for a teacher in my institution or a superintendent of an institution,) but these men are selected generally for their fitness for the position, and because of their integrity and honesty, and because of the almost universal respect which they command throughout the community; from the men that will be brought into the closest sympathy with us, and will stand by us as our best helpers and as our strongest aids, and in the time of need they will come in and stand between us and the public, sometimes, when we very much need them.

Now, Mr. Chairman, I admit that the principle of administration that has been urged here by my friend Mr. Gallaudet and my friend Mr. Mathison, of the internal affairs of the institution, is correct. As I understand it, our excellent president holds to exactly the same thing.

The President—Certainly.

Dr. Gillett—Precisely the same thing, and without ever having conversed with our president upon that subject for a single instant, I venture to say here that if it were proposed in this institution or in the institution for the blind or the institution for the feeble-minded, to divide the authority between a superintendent and a principal and give them concurrent authority, he would be the first man to say "No; it sha'n't be done!" and put his foot on it. Am I right or wrong?

The President—You are right, sir, about that.

Dr. Gillett—The difference between you and Mr. Gallaudet is as to the form of application of a particular principle.

Dr. E. M. Gallaudet—There is no difference between him and me.

The President—I supposed Brother Gallaudet was advocating the idea that a superintendent of an institution should run the whole thing,—financial department and everything else.

Dr. E. M. Gallaudet—I didn't suggest such an idea; I was particular to say in the administration of the affairs of the institution; I didn't say a word with regard to the financial matters.

Dr. Gillett—Well, I have no objection, Mr. Chairman, to the superintendent having the financial administration of the institution.

The President—Nor I, either, if the law gives it to him.

Dr. Gillett—Yes, certainly—*under the law.* In the State of Illinois the law of the State makes the superintendent the responsible authority for the whole management of the institution.

Prof. Noyes—Does it make him also a member of the board of trustees?

Dr. Gillett—Not at this time; it did years ago. He is secretary of the board of trustees.

A Member—Are you responsible for the money the steward spends?

Dr. Gillett—We don't have any steward. I have a clerk, and as many as I want, and bookkeepers.

Mr. Dobyns—Do you furnish cigars?

Dr. Gillett—No, sir; we furnish no cigars. A few years ago I burned up as many bales of tobacco as any one man ought to, and we don't have it any more.

Now, Mr. Chairman, I want to say it is more difficult to manage a small institution without a wise organization than it is to manage an institution of four times the size of the largest institution in America with a good organization. I had a letter not long ago from the president of a board of trustees asking for a suitable man to become principal of his institution, and he said the responsibilities were very great; that the institution had got to be very large,—they had forty pupils, and it was too much for one man to carry, and they had to have a principal and a superintendant besides. And I understand that the board of trustees, after changing their principal and their superintendent a good many times (sometimes at the point of a revolver, as has been alluded to here this afternoon), vow that a man shall never again enter that institution as superintendent. They think they can get some woman that will be the pliant tool for them, I suppose, to follow out their dictation—to do what ever they see proper. But there is no institution so large, if it has a proper organization and a good, honest board of trustees, and an industrious, conscicencious superintendent, working together, that will not produce a good result.

DR. MACINTIRE—This is a very large question and we might discuss it for a week; I did think I should not say a word upon it, but as our honored president has said it was our fault that there are these troubles in the institution, I desire to say a few words.

I was principal of an institution for twenty-six years, and during that time the trustees (among whom I found very faithful, good men,) had been legislated out of office, and their successors elected or appointed by a caucus and they went in there as the instrument of the party, to carry out their party's ideas; and the most of the officers of the institution have been changed frequently, although I staid through three, or up until the third change, and at that time I left. By the approval and order of the board and the certification of the superintendent they drew their warrants on the treasury and *he* was their agent. They never complained of me up to the time of these changes. These persons were not appointed by the governor, they were not elected with reference to their qualifications for the place, because there was not one man that had ever been inside of the institution or seen it or knew anything about it. They came there, and the first demand they made of me was to displace three or four parties, among others the watchman and steward, but they could not fill the place without I would nominate. They went into the legislature and they got the nominating power, that is, the recommending power to the board; they had the appointment always, but the superintendent selected his subordinates and nominated them to the board, and the board approved or rejected, as they might see fit, and very properly. Well, they found that they could not do as they desired, and they went to the legislature, and into the caucus and they decided that that power must be taken out of the hands of the superintendent, and they did take it out of his hands. And they made, in one night, five or six changes, and I tendered my resignation, and the institution has been carried on in that way since.

Now, the fault was not so much in the appointment of these men as in the legislature, and in the partisan character of it. This was done once by one party and twice by the other during my connection with that institution. And that is the trouble in most of these institutions; they must control the patronage and appointments in their party. They dismissed a watchman that had watched there for fifteen years, and put in a man that had never been inside of the institution, and placed the whole care of that building under his charge, and that without any training, just one night he came there, and the other man retired. That is a sample of it.

But the people are getting to understand how these things are working, as the president has suggested, and they are complaining. The result has been, in that institution, that the educational part of the institution has been nearly destroyed. I do not say so because I was there first, but because I know, and every one of my brethren here know, that that institution was well organized. The teachers they have there say the institution is running down in its educational departments. They get the money and use it for political purposes, they use the whole patronage, and a few of the prominent men of the State have said that they never could control the election in that county until they got control of the benevolent institutions!

I am happy to say, however, that I have escaped from that kind of government. I am in a state now where we have trustees that are not dependent, and an institution that is not dependent on party politics—an organization that is supported by men who *give* their money. The State is a patron if they have pupils that they want to educate, and they vote so much *pro rata* for the institution per year, and we do not fear party politics in a board of trustees that comes in in that way. But with a board of trustees, I don't care what party they belong to, that are appointed in caucus and elected by a partisan legislature, we will have just that thing going on, until there is some remedy in the constitution of the State, because a mere statute law does not stand in the way of them. As I say, during my connection with that institution, three times they repealed the law to get hold of the patronage and the appointments.

Mr. Crouter—Mr. President, I would just like to ask of my friend, Mr. Mathison, whether it is in the power of the bursar of his institution to deny money for necessary purposes when he asks for it.

Mr. Mathison—Oh, no, the bursar has no power to do that. If the bursar is in doubt as to the purchase of any article he may send to the inspector and have him bring it before the government; but any article I ask for under requisition it is well understood that he knows nothing about whether it is necessary for the institution or not.

Mr. Crouter—Then he cannot limit you in any way?

Mr. Mathison—No, he cannot limit me. If I draw on an appropriation and the appropriation is exhausted, he may say, "I have no further money on this appropriation." Then I would say, "Well, I want these articles; you had better arrange with the inspector and have some appropriation that is not overdrawn or a part of it set aside for this particular purpose." I arrange it in that way.

MR. HAMMOND — Mr. President, I suppose this question was proposed for discussion because in the history of the institutions in the United States there have been times when there was conflict between the superintendent and the steward; that both were responsible to the board of directors, both responsible in an equal degree; that the steward did not acknowledge the authority of the superintendent over him, and so on, therefore their opinions clashed; that there may have been conflicts of authority between two other officers of an institution in the same sort of a way; that at one time a large institution, which had been carried on under a superintendent or under a principal entirely, had its departments divided and the principal sent out of the institution and a superintendent appointed, and that that was called the dual-headed system, or dual-headed institution, and that there is a small institution in the country that is carried on something in the same way, where there is as much need of two heads to the institution as there is of two caudal appendages to some sort of feline animals; but of course if these persons are perfect people they would get along very well together, but the liability is that they may not be.

I understand Dr. Gillett to say that the superintendent is responsible for the whole management of the institution in his State, and I understand Mr. Mathison to explain that if the bursar is ordered to do something he can exercise his own judgment as to how or when he will do it or whether he will do it at all, except that he says that it is customary for him to give the order; but if he should advise him to make some certain arrangements with regard to carrying out his plan he might exercise his own judgment with regard to that and carry it out or not as he saw proper. Is it not so?

MR. MATHISON — In regard to supplies, you mean?

MR. HAMMOND — In relation to the grounds or anything like that.

MR. MATHISON — With that he has nothing to do, because I have my own plans and have money appropriated for the purpose of carrying them out. The bursar cannot say, you shall not have this or that because I have already arranged that matter. He buys the things I order and gets them at the best possible rates.

Mr. Hammond — Suppose you should happen to be over in Toronto or down in Quebec and saw a pretty good bargain there and wished to make an outlay for your institution, would you have authority to go and get it, or would you have to give an order on the bursar for it?

Mr. Mathison — No, sir; I don't do that, I have got as much as I can attend to without.

Mr. Hammond — I say, would you be allowed to do that?

Mr. Mathison — No, sir; I have never done it.

Mr. Hammond — Then you could not buy the supplies at all?

Mr. Mathison — I can buy all educational supplies, such as books and stationery and everything of that kind.

Mr. Hammond — Then, to a certain extent, the bursar is independent of the superintendent, and I think it would be better to have it as Dr. Gillett has indicated in Illinois, so that the superintendent would have the privilege of doing any one of those things that belonged to any one else, if he wanted to, and that any other person would not be at liberty to do, unless he were ordered by that head.

Mr. Swiler — Mr. President, I had not expected to say a word upon this question, but I am constrained to say, in relation to my experience on the matter that has been just introduced by my friend Mr. Hammond, and of all the superintendents in the public institutions in the State of Wisconsin for the last three or four years, has such a close, practical and intimate relation to this question of a dual management of a State institution, that I think it is demanded that a word or two should be said on the subject in relation to the experience of that State in regarded to the management of its educational institutions.

Prior to the winter of 1880-81, the institutions in Wisconsin, including the hospitals for the insane, the schools for the blind and the deaf and dumb and the reform school, were under the control of local boards of trustees and under the superintendence of a single individual, who had vested in him both the rights and prerogatives of steward and superintendent. By a revolution in the management of all the State institutions, in the winter of 1880-81, an entire change was made in their control and a new law formed, which provided that there should be a superintendent and steward for each of these institutions. During the last three years that law has been in operation, and the practical workings of it have been such that at this present time, or within a very few weeks or months prior to this time, the board of provision in control of those institutions have been induced, notwithstanding the apparent reading of the law, that there shall be a superintendent and steward for each of these institutions, to vest the authority of the steward in the person of the superintendent, in at least four of the six institutions in that State. This has been induced, not by a disposition, as I take it, on the part of that board or on the part of those who framed the law, that this should of necessity be the case, but that the conditions of the situation and the relations of one part of the establishment to the other have been such as have not been satisfactory to the board of control, to the State Board of Charities and Reform, to the public at large, and least of all to those most intimately and closely related to the interests of these institutions — the resident officers in each of them. There has been, and must of necessity be, a conflict of interests where the domestic department, and the administrative department, and the educational department, each and all being interwoven together so closely in contact that there is no line of demarkation between, must conflict if such different departments exist under different superintendents.

As I said, I had not thought to speak on this subject, nor do I wish to occupy time, but simply to say that the condition has been such as to induce this change, notwithstanding this reading of the law, which, as we now look at it, may be interpreted to mean that there shall be a superintendent and a steward, but that both may be the same individual.

THE PRESIDENT — They have done it for the purpose of preventing a friction of authority.

MR. SWILER — They have done it to remove the conflict of authority which existed in some places, as for instance the institution for the insane in Waukesha, where Mr. ———, the superintendent, has resigned, and where the succeeding event will probably be the resignation of the steward.

DR. E. M. GALLAUDET — Mr. President, I was about to say that it seems to me, in view of what is before the ladies and the rest of us this evening, that we have continued the discussion this afternoon about as far as we ought. I was about to propose that we adjourn our session.

MR. SHAPARD — Mr. President, I got a little satisfaction out of Dr. MacIntire's speech in this, that there are some countries worse than Texas, where political influences are felt to a greater extent. In our State we have had no such influences at work in our public institutions. I know that there was some reference made to that thing at the recent change made in the superintendency there, but one party has been in control, you know, of the State government almost ever since the war.

A MEMBER—Ever since the people had a right to elect their own rulers.

THE PRESIDENT—Yes, and before that.

MR. SHAPARD—So we are all on one side, all of us *who are in office*. There has been no change.

MR. SWILER—You quarrel among yourselves, only?

MR. SHAPARD—I don't know but I might tell you how we run our institution there. We believe very strongly in *Titus* down in Texas; we have a board of trustees and a steward, nominally, all in our institution, but the superintendent is the only one who has any real authority about the institution. Whatever authority other persons have there (that is, under the board) are derived from the superintendent, who has the appointment of all the teachers and officers and employes, and who also has authority, whenever in his judgment their services are detrimental to the interests of the institution, to retire them and make a change. He also has a steward, but the steward is the appointee of the superintendent. The superintendent can make his own purchases or he can direct his steward to do it, so that we have oneness of authority so far as the internal part of the institution is concerned. Everything is under one will, and that one will is, of course, under the authority of our board of trustees; that is, they have the power to change him whenever they think it best for the institution.

DR. MACINTIRE—Mr. President, I move that we now adjourn.

MR. GILLESPIE—Mr. President, I would like to offer a resolution before that motion is put. Considering the incompleteness of our records of the deaf and dumb as to the cause of deafness, the degree of deafness, and the intermarriage of deaf-mutes, as suggested by Prof. Bell's paper and many statistics, I would offer this resolution:

Resolved, That a committee of five, consisting of Dr. E. M. Gallaudet, Prof. A. G. Bell, Dr. P. G. Gillett, A. L. E. Crouter and Job Williams, be appointed to prepare a blank form for the collection of statistics concerning the deaf and dumb, as to cause of deafness, degree of deafness, marriages, and all information which is lacking to make full and complete records, in order that all statistics so gained shall be uniform, and that said form be published in the *American Annals*.

I move the adoption of that resolution.

Mr. Shapard — Could we not enlarge the field of inquiry and get some light as to what the graduates of these institutions are now doing?

Dr. Gillett — That is another field.

Mr. Crouter — Before putting that resolution I would like to state that during the last spring we have been engaged, in our institution in Philadelphia, in ascertaining facts of this nature. The board have prepared a series of questions which were sent to all of the graduates in the institution during the past ten years. These questions were sent to the pupils, and a copy of a similar nature sent to endorsers of their applications upon entering the institution. Any pupil entering our institution has to have his application endorsed by one or two or three citizens living near and knowing of his circumstances; so that we receive not only the testimony of the pupils or the graduates themselves, but that of their endorsers. This information has been arranged and tabulated in a very convenient form. I have here the form of the book — two large pages — in which the whole life of the pupil, from birth up to the time these questions were sent, is described; and I will just simply refer these papers to the committee that is about to be formed, for its use.

Dr. MacIntire — I would suggest that Mr. Crouter be added to that committee.

Prof. Noyes — Have you had some experience in distributing and getting returns from those questions?

Mr. Crouter — Yes, sir.

Prof. Noyes — Are you able to get full reports?

Mr. Crouter — Very satisfactory. Of 450 pupils addressed in this way we received very satisfactory replies from 370 and some odd, and also from their endorsers, whose testimony is, we think, perhaps more valuable than that of the graduates themselves, because of its coming from another source.

The resolution was then adopted.

Mr. Crouter — I have a letter in my hands addressed to me by some good friend in Faribault. I will just read it, as I think the Conference would like to hear it.

The secretary then read the letter, as follows:

A. L. E. Crouter, Sec. C. of I. for D. and D.,

Dear Sir: I inclose you some printed verse, on which I have worked for some years, but it is not yet as I would have it. I inscribe it to your body at this time, for the more especial purpose of suggesting a term more euphonious, less harsh, and less suggestive of class distinction, or special infirmities, than the terms deaf-mute or deaf and dumb, as applied to those under your charge. The more objectionable word *dummy* had its origin in the difficulty attending the use of the term deaf-mute.

To me there was always a pathetic thoughtfulness in the word *simple*, as applied to an imbecile; and how does the word *invalid* round off the sharp and cutting corners of special or embarassing disease? *Still-folk* not only sounds better than deaf-mute — in general use — but is suggestive of kindly feeling.

While the word was original with myself, it may have been used by others, original with themselves as well. These wings of prayer I have added to it in hopes that they might enable the word to find lodgment in some heart — when otherwise it might be lost.

Tearful eyes have overlooked much imperfection in the verse — but when it is perfected I will inclose to you the first manuscript copy, signed in full by the AUTHOR.

FARIBAULT, MINN., July 11, 1884.

THE STILL-FOLK.

Inscribed to the Members of the Fifth Annual Conference of the Instructors of the Deaf and Dumb.

God's benison rest on the still-folk all!
May He guard them from every ill
Who silently bear the burden of life,
And the mission of man fulfill:
Who have no ear for the words of cheer
Which lighten the heavy load
Of life, nor voice to ask the way
In its labyrinth of road.

May He mark a path for their life-long walk
In the valleys secure and fair,
While away to the right and left arise
The mountain-peaks of care.
Give us, their brothers, these heights to scale,
Who for danger have voice and ear;
And the flower-flecked meadows of life give them,
With nothing of harm to fear.

And give to Thy dear still-folk to hear
The song of the wild-wood flower,
And the wonderful chants of the starry choir;
And tell them for every hour

There are songs for the patient heart to sing,
Though its melody none may hear,
Yet the heart which voiced the silent song
Shall furnish as well the ear.

And give them to feel what we, forsooth,
With our hearing, do know so well,
That the truths of the depths are not the tales
Which the babbling brooks do tell;
And the hymns which God most loves to hear
May never in words have birth,
But are sung by the souls of His own dear ones,
The suffering-folk of earth.

And teach us, too, with the still-folk all,
That the words of the helping hand
And the voiceless speech of the loving eye,
All hearts can understand.
And so may they read His eye and hand
Aright, and walk to the side anear
The Father, while crossing the bridge of life,
And naught shall they have to fear.

—*Marquese.*

On motion the Conference then adjourned till three o'clock P. M., Sunday, July 13.

SUNDAY AFTERNOON, JULY 13TH.

The Conference was called to order at 3 o'clock. Prayer was offered by Dr. Gallaudet and interpreted by Mr. Dobyns.

After the minutes of the previous session were read and approved, Mr. Crouter said:

I have noticed a considerable difference in the signing of the Lord's Prayer by different teachers. I would like to see it given by several members of the Conference, to learn how much of uniformity there is among us.

Mr. Crouter, being requested to render the prayer, complied.

MR. TURTON—The method in the Kansas Institution is the same, except that instead of "bread" we use the general sign for food.

Mr. Job Turner, Dr. Gillett, Dr. Gallaudet, Mr. Williams, Mr. Noyes, Mr. Dobyns and Mr. Hammond each signed the Lord's Prayer, developing slight differences.

Mr. Williams—I think we will all agree that we ought to use signs as well and as uniformly as possible. There is, of course, room for a certain individuality of style, the same as in speech or in penmanship, but in the rendering of anything so sacred as the Lord's Prayer, and especially in the sign for God, there should be no needless variation. The idea intended to be conveyed by all the signs is "the one whom we reverence," but it is shaded off in various ways till it loses much of its original force. (Mr. Williams here indicated what he thought the best means of conveying the idea.)

Mr. Williams—The Committee on the Order of Business desire me to read the following questions, the discussion of which they offer as the program of the afternoon: 1. What is the value of Sunday-school work in our schools, and how can it best be conducted? 2. Helps in Sunday-school work.

Mr. Dobyns—I would like to hear from Mr. Williams in regard to his school at Hartford.

Mr. Williams—We have on Sunday two services, entirely free from sectarianism. There are also two hours, one in the morning and one in the afternoon, devoted to the study of the scriptures, with appropriate helps. On Monday morning the pupils recite these lessons learned on Sunday.

Dr. Gallaudet—I will give some account of the Sunday-school work as continued for many years, and, as we believe, with great success, in the National College in Washington. Some ten or twelve years ago, it was voluntarily decided by the instructors in the college to forego all connection with the other Sunday-schools of the city, and to organize in the college a Sunday-school, fully officered, and differing in no way from the Sunday-schools of the different churches. This idea was carried out, the nucleus of a library was established, and the school was conducted according to the usual plan. The superintendent opened the exercises with a short talk, after which the school broke up into classes of five or six, two or three classes of the younger ones being taught by the more advanced students. The "National Sunday-School Leaf" and "Lesson Helps" are used. During the year five Sunday-school concerts take the place of the Sunday afternoon lecture. The exercises consist of the recitation of lessons, hymns and selections, and are found to be very helpful and stimulating to the regular work of the year. We have, also, one Sunday-school picnic yearly, and all these innovations are strictly preserved as features of the Sunday-school and not of the college itself. The funds of the school are devoted to various charitable objects. We are, for instance, pledged to the support and education of a girl in Syria, who has received the name of "Sophia Gallaudet," and in whom the students feel a deep interest. They also contribute to the Deaf and Dumb Christian Association of Cork, Ireland. Their benevolences are by no means confined to the deaf, as the case of the Syrian girl will show. It is one of our chief aims that they shall consider themselves, not as an isolated race, but as a part of humanity at large. The poor families in the neighborhood are the frequent objects of their benevolence. The college janitor, who at one time became disabled for his duties, received from the Sunday-school valuable assistance. It has been found that, by making these features distinctively a part of the Sunday-school and not of the institution, an added zest and enjoyment has been imparted, which is very useful in breaking up the monotony of the routine work of the class room. The school meets in convention with other Sunday-schools, and this we consider one of the most valuable means of communication with hearing persons, by which an identity of interests and of sympathies may be cultivated. There are about one hundred students in the National College. The teachers feel well paid for giving up their relations with outside Sunday-schools and devoting themselves to these youths, who would otherwise lose one of the greatest advantages possible to them.

MR. GILLESPIE — Is the attendance compulsory?

DR. GALLAUDET — It is, in effect, though the word "compulsory" is not used. A student is not marked for absence; yet, should he absent himself from two or three successive services, it would be sure to receive some notice. Students are made to feel that attendance at Sunday-school and chapel is a matter of respect to God, and such is the sentiment among students and teachers that no pupil is likely to absent himself without good reason.

MR. CROUTER — We for a long time experienced difficulty in carrying on our Sunday-school work in the Pennsylvania Institution, because of the reluctance of teachers to do service on Sunday. There is, however, in our city a ladies' committee which acts as advisory to the board of trustees. One of these ladies formed a Sunday-school among the girls, and appointed as superintendent a semi-mute lady teacher, who chose assistants from among the pupils. The ladies then established a similar school among the boys. The Lord's Prayer, the Ten Commandments and the questions found in the American Sunday-school Union form the basis of their study and exercises. These schools have proven very successful, and now the question comes up, whether the institution teachers shall be brought into service in the Sunday-school.

Mr. Turton—The Kansas Institution requires teachers to take the same classes they have on week days into their class rooms on Sunday afternoons, and teach them from the International Sunday-school Leaf or the Primary Lessons. The children are first brought together in chapel, where they are addressed by the superintendent. After the lesson, they re-assemble again for a brief concert exercise. I prefer Dr. Gallaudet's plan, however, and would be glad to see it inaugurated in the Kansas Institution.

Mr. Westervelt—Teachers have Saturday as a day of rest, and may thus obey the command, "Six days shalt thou labor and do all thy work." I think no teacher should find a place as instructor of the deaf and dumb, who is not willing to take his or her regular class for religious instruction on Sunday. I have been in one or two schools where there was no Sunday-school; but the lack always manifested itself in the condition of the pupils. At Rochester we have a Sunday-school which has been productive of much benefit to the pupils. They are glad to avail themselves of the religious instruction offered, and most of the pupils of sufficient age and understanding have become members of churches.

Mr. Dow (Principal of the Minnesota School for the Blind)—In case of a conflict between the child and the parent as to a choice of churches, what would you do?

Mr. Westervelt—There is seldom any disagreement. A child usually chooses the church to which his parents belong. If he did not, few parents would insist. I never permit a child to go contrary to his parents' wishes, however.

Mr. Noyes—We have recently made a change in our Sunday exercises, which has proven very satisfactory to us. Formerly we had two lectures, one in the morning and one in the afternoon. I used to feel that under that plan there was a good deal of wasted time and wasted effort, and no great amount of moral or religious benefit. Let a lecture be ever so carefully prepared with reference to some supposed need of the children, I found it not infrequently the case that, on questioning one of them afterwards as to the points in the talk, he didn't know anything about it, it was all a blank to him. I became thoroughly dissatisfied with this plan, and upon visiting Dr. Gillett's institution at Jacksonville, where they have a Sunday-school, I decided upon a change. We now have, in the morning, a lecture most faithfully prepared, and in the afternoon a Sunday-school, in which we use the National Lesson Leaves and "Helps," and have the school divided into classes under the teachers of the institution. There has been a very satisfactory progress in consequence of the change. The child's mind seems to be brought in contact with the point in a way to make the most effectual and lasting impression. We have no desire to return to the old plan of the two lectures. Each teacher takes the class he teaches during the week, which seems advisable because he is better acquainted with the disposition and needs of his own pupils.

DR. GALLAUDET — We will all admit that it is desirable to treat our pupils as much like hearing children as possible. It would seem that with the latter, a change of teachers is desirable as bringing variety and freshness into the Sunday exercises. I favor a change of teachers on Sunday, and also like the plan of selecting from the more advanced pupils, teachers for the younger ones. The classes may thus be made much smaller, which is a great advantage.

MR. DOBYNS — I would like to ask Prof. Noyes if his teachers explain difficult points and prepare the pupils for the Sunday lesson, on the Friday or Saturday before.

MR. NOYES — Yes.

MR. GILLETT — This is not a question which calls for any polemic or pyrotechnic display, yet it is not less important than any the Conference has considered. It involves a principle which underlies the foundation of all our schools and all our benevolences. For this is a Christian nation, we are a Christian people, and without the spirit of Christianity pervading the hearts of our law-makers, we would never have had these institutions for the education of the unfortunate. We educate the body and the hands to ways of self-helpfulness. We train the mind to knowledge and quickness of perception and correctness of inference. But man is a trinity — a soul as well as a body and a mind — and any institution which neglects to give to the souls in its keeping, that training which may turn out Christian men and women, has failed to do its duty, and God's curse is pronounced upon it. There is no other so powerful exposition of the spirit of Christianity as these same institutions. The founding of such an institution as this never entered the conceptions of Plato or Socrates, with all their intellectual greatness. It was left for the Creator of the world, when he came into it, to evolve the principle of universal brotherhood and love. We are recreant to our trust if we fail to use our utmost effort to develop the spiritual nature of every child placed under our care. Even that venerable missionary there (pointing to Mr. Turner), told me, not seven hours ago, that not his own mother was able to develop in his mind the idea of a divine being. It lies with us, by the exercise of our utmost skill and patience, to give to these children that which is of infinitely more value than any possible manual or mental training.

I know Sunday is a hard day to fill in properly. We are to teach not morality merely, but religion. Our best duty to the State is to inculcate a practical knowledge of the religion of Jesus Christ, a knowledge which will grow into an experience, having the power to get down into the child's heart and make a new boy of him. The deaf boy or girl is shut out from a thousand and one opportunities that others have. He is shut out from sermons, lectures, conversations, and he will never get such a knowledge of religion as he is entitled to if he does not get it here. When we remember that nearly all the enticements to evil are presented to the eye, while nearly all the warnings against evil are addressed to the ear, we may understand how peculiarly subject to temptation is the deaf youth. He goes out into the world. He sees all that any one sees, and more, perhaps. But he is shut out from all the warnings against pursuing the course of temptation.

As to the church a child should join, I tell them, "The church that is good enough for your parents is good enough for you." I am a Methodist because my father was. If he had been a Presbyterian I would have been one, too. Any church, Presbyterian, Baptist, Congregational, Methodist, is good enough for anybody. If we lived up to the precepts of any one of them we would be a good deal better than we are.

PRESIDENT MOTT—Do you have in Illinois a "Liberty of Conscience Law," which forbids religious instruction in your State institutions?

DR. GILLETT—No.

PRESIDENT MOTT—We have in Minnesota. When it was passed I went down to the legislature to see about it, but they said it did not apply to us, as the deaf are exceptional. We are included by the letter, but not by the intent of the law.

DR. GILLETT—We have at the Jacksonville Institution a lecture in the morning and a Sunday-school in the afternoon. The Sunday lecture, I find, has a very good influence. We try to give it a direct bearing on the every day institution life, and the effect may often be seen in the improved conduct of some quarrelsome or refractory boy or girl. Sunday afternoon the library, containing six thousand volumes, is thrown open to the children, who are under the supervision of the librarian. Every Sunday morning a Sunday paper, suitable to his age and understanding, is given to each child.

Mr. Pratt — I may not be speaking quite to the question, but I would like to say that, because I have been for eight years out of the work and have but recently re-entered it, it is possible that I notice a greater lack of uniformity in the use of signs than those who have been continuously engaged in the work. I think it arises from the fact that teachers frequently pick up their signs from the children, instead of learning them from experienced teachers. They thus get a corruption of the sign language, which they, in turn, impart to their classes; and hence the degeneracy of the uniform language into a number of dialects, as it were.

On the subject of moral and religious instruction, I feel that too much cannot be said. It is truly the most difficult and puzzling problem we are asked to solve. Any instruction which is addressed merely to the hand or the mind, unless coupled with religious teaching which goes down to the heart and transforms it, leaves "the last state of that man worse than the first." It is a question whether compulsory religious instruction strikes very deep. When the pupils feel that their teachers don't want to give up an hour of their Sunday ease to them,— that they do it grudgingly and because they must, it is not likely to do them much good. But, if the pupils may feel that "my teacher loves my soul better than her own ease or her salary," then he must be benefited by her instruction.

By far the most effective Sunday-school work in our institution has been done by one lady teacher who felt it laid upon her heart to do something for the girls. She begun by inviting five or six of those who seemed to feel most interest in the matter, to gather in her room Sunday afternoon. The class rapidly grew to sixty or seventy, and there were such genuine conversions as could never have come about if the instruction had not been voluntary instead of compulsory, or if the teacher had not risen to something higher than even the purest moral precepts.

Mr. Hammond — We have in the Iowa Institution regular morning services, conducted by the superintendent, a teacher, visitor or clergyman. It is the custom to invite ministers of all denominations to speak to the children, some one interpreting for them. In the afternoon we have a lecture, and sometimes teachers or pupils tell interesting stories to the children. Then each teacher takes her own class to her recitation room. Sometimes, by doubling classes, the teachers relieve themselves upon alternate weeks. They are all willing to do the Sunday work, realizing how their pupils are dependent upon them for their religious instruction. We have also a boys' and girls' prayer-meeting separately, over which the teachers exercise some supervision.

PRESIDENT MOTT — Why do you not bring the boys and girls together in prayer-meeting?

MR. HAMMOND — We find that there is not the same freedom of expression in each other's presence. Each do better without the other, and prefer the present arrangement.

I confess I have not seen as much practical benefit from the religious instruction as I could desire. I have not infrequently found that the boy who on one day would make a fluent profession of Christianity, would, on the day following, steal, — and if he were caught, he would lie to get out of it. I say I have seen enough of this to make me anxious as to the actual benefit of the religious instruction given them. Yet I suppose such things happen in other Sunday-schools and churches, and perhaps they are to be attributed to the frailty of human nature in general.

MR. DOBYNS — It is known to most of you that the superintendent in Mississippi has charge of two institutions, one for white and one for colored children. I wish to say that there is nothing for which the people of the South feel more grateful to the people of the North than for their efforts to ameliorate and enlighten the condition of superstitious ignorance of the colored population among us. The philanthropic Northern people who are founding colored churches and schools in the South have our warmest gratitude; but I am proud to say that the State of Mississippi, in her official capacity, is not behind them in this work, and that as a State we deeply appreciate their services, and desire to co-operate with them in their efforts.

The discussion was voted closed.

DR. MATTOCKS, of Faribault, asked permission to thank the Conference, in behalf of the citizens of Faribault, for the distinguished honor so worthily conferred upon Mr. Mott by his election to preside over the meetings of this body. He said: "I will not say half as much as I would if Mr. Mott were not in the room; but this I will say, that you could not have honored another of Faribault's citizens whom we more delight to honor than Mr. Mott himself."

MR. NOYES read a telegram from Prof. A. G. Bell, sent on his way to Madison, suggesting the appointment of a bureau of statistics with regard to deaf-mutes, to the end that reliable information as to their number, cause and degree of deafness, intermarriage and other important particulars might be obtained. At the suggestion of Mr. Noyes, the secretary was instructed to apprise Prof. Bell that the Conference had anticipated his suggestion by the appointment of such a bureau of statistics the day previous; and, also, that his name was among the five of those appointed to the work.

MR. WESTERVELT, after a few preliminary remarks, offered the following resolution:

Resolved, That the thanks of this Conference are due and are hereby tendered to our esteemed friend and host, Mr. J. L. Noyes; to the matron, Mrs. A. R. Hale, and to all the officers of the institution, for their untiring exertions to make our stay in Faribault agreeable; and we desire to assure them that in the sense of being *at home*, which has filled the heart of every member of the Conference, our hosts have the proof of the complete success of their labors of love.

The resolution was seconded by Mr. Mathison, and adopted by a hearty unanimous vote.

MR. NOYES—I don't know as a man is to be thanked very much for doing his duty. During the past years in which we have so often enjoyed the favors and the hospitality of different members of this Conference, we have always felt a desire to make you some return. It was with joy that we learned your acceptance of the invitation to the Minnesota School for the Deaf, for the purpose of holding our Fifth Quadrennial Conference; and now, while you have been here with us, we have only tried to return some of the favors and compliments of which we have been the frequent recipients in the past. I am glad that we have been favored with cool days and refreshing nights, and, more than all, that this meeting has been so satisfactory and profitable, and that it has proven a genuine love-feast to us all.

DR. E. A. FAY—I wish to submit the following:

Resolved, That the sincere thanks of the Conference are tendered to the board of trustees of the Minnesota School for the Deaf, for the bountiful hospitality with which its members have been entertained; also, to the citizens of Faribault, for their courteous endeavors to make our visit pleasant; and that we congratulate both trustees and citizens upon the prosperous condition of the noble institution with which we have been permitted to become acquainted.

Dr. FAY made some remarks in support of the resolution, which was unanimously adopted.

MR. SIMPSON—I wish to offer the following resolution:

Resolved, That the thanks of the deaf members of this Conference are tendered to all who have so kindly interpreted its proceedings.

The resolution was adopted.

Mr. HAMMOND read the following:

Resolved, That a vote of thanks be tendered to the Chicago & Northwestern, to the Chicago, Milwaukee & St. Paul, the Wisconsin, Minnesota & Pacific, Minneapolis, St. Paul & Omaha, and the Grand Trunk Railroads, for the courtesies extended to the members of the Conference.

MR. DOBYNS offered the following:

Resolved, That the thanks of the Conference be tendered the correspondents who have so faithfully and fully reported the proceedings.

Adopted.

MISS BARTON submitted the following resolution:

Resolved, That the Conference tender sincere thanks to Mr. A. L. E. Crouter, for his faithful and efficient services as secretary.

Adopted.

MR. CROUTER—I wish to express my thanks for the resolution the Conference is kind enough to adopt, and, also, to offer the following:

Resolved, That the thanks of this Conference are tendered to Miss Nellie Pease, of Faribault, for her beautiful floral tributes.

Adopted.

MR. PRATT offered the following resolution, prefacing it with a few remarks testifying his personal appreciation of President Mott:

Resolved, That the thanks of this Conference are due and are hereby most heartily tendered to the Hon. R. A. Mott, for the most acceptable manner in which he has presided over the meetings of this body; and the members of this Conference beg leave to wish their honored president many years of happiness among those he has loved and served so long and so well.

The resolution was most heartily adopted.

PRESIDENT MOTT, stepping down from the platform, said: I feel now that I want to get right down among you and talk as a brother to brothers and sisters. As far as your resolutions refer to the board of trustees, of which I have the honor to be a member, I can understand them. But when I come to consider that some of this great honor is intended for me personally (and I can not but take it so), I can't understand that. I don't know why you made me your president. I don't know why you have thought it proper to use the expressions of personal esteem and regard which this resolution contains. But I suppose you think I love this institution and this work. Well, I do. But I have a very large family which I love better. There is enough there to absorb the affection of one able-bodied man. And next, I love that imbecile school over yonder. You may say what you please, they are the smartest folks in the State. I tell you they are more like little babes, and they get right up to my heart as nobody else can. And then, next, I love the blind that are neighbors to you, for they are more unfortunate, more helpless, need more tenderness and care. And then we have had to do a great deal of grading and improving for them lately, and that makes them seem nearer. Well, then, here you are, seventh or eighth in my heart; but I tell you that if I love you less it is only because you need it less. When this institution sent out its last class I said, "Now the good Lord may call me just as soon as He has a mind to." But if I am to receive such honors and such appreciation as this, I think I shall want to live a long, long time.

By vote of the Conference, all records were ordered to be left in the hands of Mr. Noyes for publication.

On motion of Dr. Gallaudet, the committee on arrangements, consisting of Dr. Gillett, Mr. Wilkinson and Miss Rogers, was continued to arrange for the next meeting.

DR. GALLAUDET—I move, Mr. President, that we adjourn.

DR. GILLETT—Let us sing "Blest be the tie that binds." The Conference joined in the hymn, and at the conclusion the president declared the Conference adjourned without date.

SUPPLEMENTARY.

On the cars and on the steamer, in Madison, Wis.:

Resolved, That the members of this Conference extend their most hearty thanks to Dr. P. G. Gillett, for his thoughtfulness and care in providing for our comfort and enjoyment on our journey to and from Faribault, July 16. Also, to Superintendent J. W. Swiler, for his kind and thoughtful attention in providing a delightful excursion on Lake Mendota.

REPORT OF THE SUPERINTENDENT

OF

THE SCHOOL FOR THE BLIND.

1882—1884.

SCHOOL FOR THE BLIND.

OFFICERS AND TEACHERS.

For 1882.		For 1883.
	SUPERINTENDENT.	
J. J. DOW.		J. J. DOW.
	MATRON.	
KATE A. BURNS.		KATE A. BURNS.
	TEACHERS.	
MARY KIRK.		MARY KIRK.
ALICE MOTT.		ALICE MOTT.
	MUSIC TEACHERS.	
MINNA M. HEGMAN.		MINNA M. HEGMAN.
ALBERT FLECKENSTEIN.		ALBERT FLECKENSTEIN.
	SHOP FOREMAN.	
ABRAM PHILMAN.		MOSES B. GAINES.

REPORT

OF THE

SUPERINTENDENT OF THE SCHOOL FOR THE BLIND.

To the Board of Directors:

The period covered by this report includes the two years beginning August 1, 1882, and ending July 31, 1884.

For the first school year there were in attendance thirty-six pupils, of whom nineteen were males, and seventeen females.

For the second school year there were in attendance thirty-four pupils of whom nineteen were males, and fifteen females.

No changes in officers and teachers occurred during this time, except in shop foreman.

At the close of this period, the two teachers in the Literary Department, Miss Mary Kirk, and Miss Alice Mott, and the assistant teacher in the Music Department, Mr. Albert Fleckenstein, closed their connection with the school; the first named to enter upon the matrimonial state, and the last two to continue their education further. Their services have been faithful, earnest and devoted, and it was with great reluctance that they were parted with.

Their places have been filled by the employment, for the coming year, in the Literary Department, of Mr. W. R. L. Jenks, late of Carleton College, and Miss Emma L. Rohow, a recent graduate of the Winona Normal School, and in the Music Department of Mr. David Davis, who last year completed a course of study in the Philadelphia Institution for the Blind.

These teachers have all entered heartily upon their work and it is confidently expected that they will maintain the standard of the past and show abundant and satisfactory fruits of their labors.

Mr. Edward Marum, a pupil, takes charge of the broom shop for the coming year. He has had sufficient experience in the charge of the shop to warrant the expectation of successful work there.

The school work has gone on substantially in accordance with the course of study given in connection with this report, with such variations as the special needs and interests of the pupils seemed to demand.

Classes have been conducted in the following branches: Reading in the ordinary embossed letter and in the New York point system, writing, spelling, object lessons, mental and practical arithmetic, algebra, geometry, geography, history, grammar, etymological spelling and defining, natural philosophy, natural history, Latin and German.

In the music department instruction has been given upon the piano, cabinet organ, violin, viola and violoncello. Instrumental music forms the most important part of our music work, and every pupil is instructed in it who shows any capability in that direction. It is not probable that any large proportion of the pupils so instructed will become sufficiently proficient in music to make their knowledge and skill a source of self-support. Yet some will do so, and even if none did, the great addition to the future happiness which even a moderate knowledge of music gives, would fully justify the effort and expense which is involved in such instruction.

With but two or three exceptions, all the pupils receive instruction in class singing, for which purpose the school is divided into two classes, *each* of which meets twice a week for instruction and practice. Two classes in harmony, also, each meet twice a week, and instruction is given in the New York point system of musical notation.

A much-needed addition to our musical outfit has been made in the purchase of an excellent Estey cabinet organ, of sufficient size and compass for our present needs.

The art of piano-tuning is coming to be recognized as the most desirable and lucrative occupation for such blind persons as have sufficient natural ability for it. One of our graduates who left this institution some years ago, with such musical training as we had been able to give him, has since taken a course in piano-tuning in the Boston School for the Blind, and now fills an important and remunerative position as piano tuner in a leading St. Paul music house. Heretofore, the number of pupils with the requisite qualifications for instruction in this art has been so small as hardly to justify its introduction; but the time has now arrived when something can be profitably done in this direction.

Musical exhibitions have been given at the close of each year's work, which show a creditable progress in the pupils of the music department.

During the last year considerable interest was aroused among the pupils in dramatic representation, and two public entertainments were given, one of which, a version of "Midsummer Night's Dream," prepared for the purpose, with appropriate music, attracted much attention both from the novelty of the entertainment and the readiness of the pupils in their parts.

In the Industrial Department the girls spend two hours each afternoon in hand and machine sewing, knitting, beadwork and other fancy work, and assist to some extent at other times in the household work. The older boys spend three hours a day in the broom shop. The Industrial Department, while not financially self-sustaining, is of great value in inculcating habits of industry and in securing for the blind a degree of manual training otherwise impossible, aside from the definite practical result of fitting them for competition with the seeing in the struggle for existence.

The division of school work in force, places the school room work proper in the forenoon, the industrial work mainly in the afternoon, while the evening is devoted to study, recreation, and to listening to reading. The musical practice is distributed throughout the day.

The great event during the period of this report is the erection and occupation of a new main building during the years 1883 and 1884. The building was begun before the close of the school term, in the spring of 1883, and was completed in the spring of 1884. The opening of the term 1883-4 was deferred nine weeks, on account of the incomplete state of the new building, and of the unfinished repairs in the old buildings, which were to a considerable extent remodeled, to adapt them to the new structure. Only a small portion of the new building was occupied at the opening of the term, and the conduct of the school during its completion was attended with many annoyances and embarassments from the presence of workmen and material in the building, but these inconveniences are now happily over, and the substantial results of a building ample in size and thoroughly adapted to its purposes fully compensate for those temporary annoyances.

The grading and improvement of the grounds, laying out of drives, putting in of a cistern, and the establishment of a thorough system of fire protection both inside and outside the buildings, were all much needed, and have been completed, much to the comfort and safety of the institution.

The health of the school for the past two years, has, on the whole, been good. Two deaths of pupils have occurred during that time, but neither of them at the institution. Frank Miles, who was admitted to the institution in September, 1882, had hereditary tendencies to consumption, which developed to such an extent as to make it necessary for him to be taken to his home in January, 1883, where he died the next March.

Arthur Harrington was admitted to the institution in 1879, and had regularly attended since that time. A slight rheumatic attack detained him at the institutionfor a week after the close of the term, in June, 1884, after which time he returned to his home in Chester, Minn., where he died very suddenly and unexpectedly in September, 1884.

A list of the uneducated blind in the State is given with this report. From this it will be seen that there are forty-five persons between the ages of ten and twenty-five who have never attended this school. Some of these are known to be physically incapable of attendance, and it is probable that owing to defective sources of information, a few of the others may have been incorrectly entered in this list, but past experience would indicate that there are enough yet unknown to balance these cases, so that the number given is presumably about what should be added to the school. Circulars and all necessary information have been sent to all of these persons, and in some cases for several successive years, but for various reasons, well understood by all educators of the blind, they have not yet seen fit to improve the opportunity the State proffers them. The tenderness of parents for their timid and helpless blind children, the natural reluctance of the blind child to leave home and its known and loved surroundings for an unknown and remote institution, easily account for a part of this failure on the part of these persons to utilize the benefits of the institution, but it is to be feared that indifference and ignorance in many cases deprive the helpless child of these advantages.

I estimate that there will be needed for the current expenses of this school for the next fiscal year beginning August 1, 1885, the sum of $13,500, and for the year beginning August 1, 1886, the sum of $14,500, provided that the increase of attendance should be only what may reasonably be expected during that period.

The beautiful and appropriate donation of a plaster copy of Miss Peabody's (Mrs. Hawthorne) well known bust of Laura Bridgman by Mrs. Peter Brooks, of Boston, Mass., calls for special mention, and the thanks of the pupils are hereby tendered to her for this token of her interest in them.

The thanks of the Institution, and of the pupils in particular, are also due and are most heartly tendered to the publishers of the *Faribault Republican*, the *Rice County Journal*, and the *Northwestern Chronicle* for the donation of these papers, and to the publishers of the *Atlantic Monthly*, *Lippincott's Magazine*, the *New York Tribune*, the *Minneapols Daily Tribune*, and the *Saint Paul Pioneer Press* for reduced rates upon their publications.

To the managers of the Milwaukee & St. Paul, the Minneapolis & St. Louis, the Minneapolis & Manitoba, the Northern Pacific, and the Chicago & Northwestern railroads, are hereby tendered our thanks, not only for reduced rates for our pupils upon their respective roads, but also for the kindness, care and courtesy which they have uniformily extended to our pupils in their journeys to and from the Institution.

In closing I will anticipate what more properly belongs to a future report by stating that there are now (Nov. 10th), in attendance thirty-eight pupils, a larger number than have ever before been present at any time, and that the school is meeting with all reasonable expectations in its progress during this school term.

J. J. Dow, Superintendent.

SCHOOL FOR THE BLIND.

COURSE OF STUDY FOR EIGHT YEARS.

I.

Reading—1. Line Print: Butler's or Boston Readers.
2. Point Print: Appleton's Readers.

Spelling—Reading Lessons; Wisconsin Speller.

Arithmetic—Oral; with Counting Frame, etc.

Object Lessons—In common things; learn to tell by touch, and their use.

Recitations—Simple pieces; with special attention to articulation and correct pronunciation.

II.

Reading—1. Line: Star Readers and Books of Nature.
2. Point: Children's Tales and Gospel of John.

Spelling—Wisconsin Speller, and reading lessons.

Arithmetic—Colburn's Mental, and exercises in notation and numeration on type slate.

Geography—Oral lessons in direction, etc. Map of U. S.—Our World, No. 1.

Writing—N. Y. Point.

Object Lessons—In common things; on Geometrical forms; on Weights and Measures.

Recitations—Pieces of Prose and Poetry; Dialogues, and telling short stories.

III.

Reading—1. Line: Selected works. 2. Point: Selected works.

Spelling—Written in point.

Arithmetic—Colburn's and exercises in written arithmetic on type slate in addition, subtraction, multiplication and division.

Geography—Our World, No. 1, with map study.

U. S. History—Elementary: Selected periods in oral lessons with illustrative stories.

Writing—With pencil on grooved board.

Object Lessons—On plants and trees; learn to recognize, and uses.

Recitations—As before and practice in letter writing in point and pencil.

IV.

Reading—1. Line: In assigned books with stated reports, but no recitation. 2. Point: Same as in line, alternating with it.

Spelling—Written in point with definitions.

Arithmetic—Robinson's Practical; using slate to illustrate methods, but working examples orally.

U. S. History—Higginson's, with Anderson's chronological tables and map study of United States.

Geography—Our World, No. 2.

Writing—With pencil.

Object Lessons—On animals, especially domestic, and on parts of human body and comparative illustrations.

Recitations—Short compositions and oral lessons on parts of speech.

V.

Reading—In Point and Line, as last year, with special reference to studies pursued.

Spelling—In Etymological Speller.

Arithmetic—Robinson's Practical; with use of point slate in retaining partial results in long examples.

Geography—Our World, No. 2, with oral lessons in Physical Geography.

U. S. History—Higginson's Completed.

General History—Swinton's Outlines, to succeed Higginson's.

Natural History—Tenney's, and oral lessons.

Composition—With oral lessons in Syntax.

VI.

Reading—With reference to studies pursued.

General History—Swinton's Outlines, with Schmitz's Histories read.

Physiology—Cutter's, with oral lessons on Hygiene.

Analysis and Parsing—And review of oral lessons in Grammar.

Civil Government and Political Economy—Nordhoff's Politics for Young Americans, with chapters from Perry's Political Economy and study of U. S. Constitution.

Composition—With oral lessons on Rhetoric.

This completes the regular course.

VII.

Reading—With reference to studies pursued.

Mathematics—Elective: Arithmetic reviewed, or Algebra or Geometry.

Natural Philosophy—Rolfe & Gillet's.

Physical Geography—Guyot's, with lessons in descriptive astronomy.

English History—Thalheimer's, etc.

VIII.

Reading—With reference to studies pursued.

Mathematics—Elective: Algebra or Geometry.

Geology—Dana's short story, with lessons in descriptive Chemistry.

Mental Philosophy. }
Moral Philosophy. }

English and American Literature—Brooks & Lawrence's primers and Shaw's History of English Literature.

This completes the regular and special courses.

MINNESOTA SCHOOL FOR THE BLIND.

CIRCULAR.

This school is located in the city of Faribault, and is free to all the blind in the State of Minnesota between the ages of ten and twenty-five years, who are capable of receiving instruction.

Six years is the regular period of instruction, but at the expiration of this period two additional years may be granted upon the recommendation of the superintendent and the approval of the board of directors. The course of instruction includes the branches usually taught in the common schools of the State, and such higher branches as the pupils are capable of mastering in the period allotted. Special attention is given to musical training, both vocal and instrumental. Instruction is given upon the piano, cabinet organ and the violin to all who desire it and who are capable of making satisfactory progress upon these instruments.

All the boys of sufficient age and strength are taught the trade of broom-making, in which work a portion of each day is spent.

The girls are daily instructed in hand and machine sewing, knitting and fancy bead work, and in some kinds of household work.

There is no charge to the parent for the board, tuition and care of the pupil, but the parent must provide sufficient comfortable clothing and pay the traveling expenses of the pupil to and from the school.

There is but one vacation, which begins at the close of the school year in June and continues until its opening on the second Wednesday in September. No provision is made for the care of pupils during the vacation, hence parents must take their children home at the close of the term.

The superintendent, matron and teachers reside in the same building with the pupils, and every effort is made to combine, so far as possible, the comforts of a home with the advantages of a school.

The use of tobacco in any form, and of spirituous liquors as a beverage, by the pupils, is strictly prohibited. Parents are urged to use their utmost endeavors to prevent the formation of these habits by their children before they come to school and their practice during the vacation.

Blank forms of application for admission, containing a list of questions to be answered for the pupils, will be furnished by the superintendent upon application. No pupil will be admitted until this application, with the questions satisfactorily answered, is received by the superintendent.

Alphabet sheets and books for instruction in reading raised print will be furnished upon application, and the superintendent will gladly give information or advice as to the preliminary training and instruction of children.

All applications for admission and letters of inquiry should be addressed to

J. J. Dow,
Sup't School for the Blind.

FARIBAULT, MINN.

APPLICATION PAPER.

This school forms one branch of the Minnesota Institute for the education of the Deaf and Dumb and the Blind, and School for Idiots and Imbeciles, but is entirely separated from the other two branches of the institute, both in its buildings, superintendency and internal organization. It is free to all blind children in Minnesota between ten and twenty-five years of age who are capable of receiving instruction. Parents and guardians of blind children who are desirous of placing them in this school are requested to write out clear and definite answers to all the following questions and forward the application paper thus filled out to the superintendent. With this application paper is sent a circular containing all necessary information concerning the school, which is to be retained by the friends of the applicant.

QUESTIONS.

1. What is the full name of the applicant?
2. What was the date and place of birth of the applicant?
3. What are the full names of the father and mother?
4. What is the nationality of the parents?
5. Is either parent dead? If so, has a second marriage taken place?
6. If the parents are dead or have ceased to provide for the applicant, who is the guardian?
7. Will the parents or guardian take charge of the applicant during the summer vacation and provide suitable clothing during the school term?
8. What is the post office address of the parents or guardian?
9. What is the nearest railroad station and on what road is it?

10. What are the names and ages of the applicant's brothers and sisters?

11. At what age did the applicant's blindness occur and what was the cause of it?

*12. State whether any of the relatives of the applicant are deaf and dumb, blind, idiotic or insane.

*13. Was there any relation between the parents before marriage?

14. Can the applicant see any? If so, how much?

15. Has the applicant ever been examined or specially treated by an oculist? If so, when and by whom?

16. Has the applicant ever been to school? If so, when, where, and for how long a time?

17. Is the applicant—
    1. Of sound mind?
    2. In good health?
    3. Free from physical deformity?
    4. Free from immoral habits?
    5. Free from contagious diseases?
    6. Addicted to the use of tobacco or spirituous liquors?
    7. Subject to epileptic fits?

18. Has the applicant been vaccinated? If so, how long since?

19. Has the applicant had—
    1. The measles?
    2. The scarlet fever?
    3. The small pox?
    4. The mumps?
    5. The whooping cough?
    6. Cerebro spinal meningitis?

20. What church is it desired that the applicant should attend on Sunday?

21. Is it purposed to give the applicant the benefit of a full course of study (eight years) in this school?

22. Is the applicant a resident of Minnesota?

23. What is the name and post office address of the person who filled out this blank?

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* Questions 12 and 13 need not be answered where blindness was caused by accident.

LIST OF PUPILS.

Name.	Age.	Date of Admission.	Post Office.	County.
Anderson, Anna	18	Sept., 1881	Red Wing	Goodhue.
Arnett, Lizzie	17	Sept., 1881	Beaver Falls	Renville.
Battin. Albert	21	Sept., 1881	Lakeville	Dakota.
Bosshart, George	10	Sept., 1880	Morristown	Rice.
Cameron, Sandy	11	Nov., 1883	Duluth	St. Louis.
Carroll, Maggie	10	Sept., 1882	Duluth	St. Louis.
Case, Maud	10	Jan., 1881	Dodge Centre.	Dodge.
Caw, Nona	8	Sept., 1880	Chatfield	Fillmore.
Constans, Edward	11	Sept., 1880	Mankato	Blue Earth.
Desreuleau, Remi	16	Oct., 1882	Belle Prairie	Morrison.
Erickson, Jennie	10	Nov., 1883	Lake City	Wabasha.
Eves, Mary	18	Oct., 1874	Owatonna	Steele.
Farmer, Frederick	9	Sept., 1877	Spring Valley.	Fillmore.
Fenske, Albert	16	Sept., 1882	New Ulm	Brown.
Ferber, Henry	14	Sept., 1878	Pine Island	Goodhue.
Harrington, Arthur	10	Jan., 1879	Chester	Olmsted.
Harper, George	13	Nov., 1883	Minneapolis	Hennepin.
Houdek, John	13	Jan., 1883	Bird Island	Renville.
Hurlbut, Irene	16	Sept., 1879	Byron	Olmsted.
Jackman, Frank	9	Nov., 1880	Shakopee	Scott.
Jones, Lena	16	Sept., 1880	Eden Lake	Stearns.
Leveen, Mattie	10	Sept., 1879	Marine Mills	Washington.
Lewis, May	15	Dec., 1881	Lewiston	Winona.
Linehan, John	10	Sept., 1880	Minneapolis	Hennepin.
Marum, Edward	32	Oct., 1881	Kasson	Dodge.
McGinnis, Charles	13	Sept., 1879	Lauriston	Chippewa.
Miles, Frank	18	Sept., 1882	Kasota	Le Sueur.
Murphy, Joseph	13	Sept., 1882	Janesville	Wasecca.
Murphy, Thomas	17	Sept., 1876	Morris	Stevens.
Peterson, Eva	16	Sept., 1876	Montevideo	Chippewa.
Richardson, Seth	23	Feb., 1882	Beaver Falls	Renville.
Roher, Frank	11	Mar., 1881	Rush City	Chisago.
Roher, John	10	Mar., 1884	Faribault	Rice.
Ross, Elmer	14	Oct., 1881	St. Johns	Kandiyohi.
Ross, Sarah	15	Jan., 1883	Verndale	Wadena.
Schroeder, Fred	10	Sept., 1882	Minneapolis	Hennepin.
Truax, Mary	15	Sept., 1878	Hastings	Dakota.
Vanduzee, Lurilla	25	Nov., 1883	Jackson	Jackson.
Webb, Clara	25	Sept., 1882	Forest Mills	Goodhue.
Westcott, Myrtle	10	Sept., 1878	Minneapolis	Hennepin.
Whipple, Viola	10	Sept., 1881	Northome	Hennepin.
Wilkins, Minnie	10	Oct., 1879	Faribault	Rice.

Total, 42.

Names of Blind Children in Minnesota who have not attended this School.

NAME.	Age.	Post Office.	County.
Allen, Wesley	24	Utica	Winona.
Abbott, ——	15	Forest City	Meeker.
Bradley, Mary	19	Arlington	Sibley.
Brambille, Anna	7	Benson	Swift.
Bayles, Charles L	21	Rosendale	Watonwan.
Bakkin, ——	19	Vernon	Dodge.
Baeder Josephine	6	Minneapolis	Hennepin.
Backman, Hammon	...	Castle Rock	Dakota.
Clewett, Emily	16	White Bear	Ramsey.
Clewett, Celine	14	White Bear	Ramsey.
Carroll, John	7	Duluth	St. Louis.
Calverly, Eddie	14	Duluth	St. Louis.
Cumings, Ella	13	Fountain	Fillmore.
Carl, Wetman	24	La Crescent	Houston.
Chowan, Alva	17	Northome	Hennepin.
Coudriske, ——	8	Hastings	Dakota.
Dikern, Clara	10	Whalan	Fillmore.
Flooding, Bertha	8	Alexandria	Douglas.
Ferguson, Willie	15	Fountain	Fillmore.
Fenske, Anna	13	New Ulm.	Brown.
Guest Robert	12	Nora	Pope.
Grosquest, Fred	20	Cottage Grove	Washington.
Grosquest, Charles	17	Cottage Grove	Washington.
Goudy, Lizzie	8	Stanton	Goodhue.
Habzrichter, Cornelius	16	Mountain Lake	Cottonwood.
Hanson, Salmon	9	Wacouta	Goodhue.
Hyssel, ——	...	Pickwick	Winona.
Hyssel, ——	...	Pickwick	Winona.
Johnson, Isabella	19	Hazelwood	Rice.
Kripner, Eva	...	Meriden	Steele.
Kuske, Robert	21	Lake Prairie	Nicollet.
Lambert, Mary C	11	Pine City	Pine.
Lambert, William A	9	Pine City	Pine.
Mead, Bertha	...	Luverne	Rock.
Mathiason, Mathias	12	Camp Lake	Swift.
Masher, Edgar	7	Waseca	Waseca.
Mayer, Andrew	20	Winona	Winona.
Myers, Mary	23	Minneapolis	Hennepin.
Miles, Abram	16	Kasota	Le Sueur.
Miles, Alva	5	Kasota	Le Sueur.
Mann, ——	15	St. Paul	Ramsey.
Miller, ——	8	Minneapolis	Hennepin.

Blind Children in the State who have not attended this School — Continued.

NAME.	Age.	Post Office.	County.
Nelson, Nels	24	Rolling Fork	Pope.
Nordstrom, Carl	8	Stockholm	Wright.
Oleson, Edwin	23	Shell Rock	Freeborn.
Peterson, Even	10	St. James	
Penderson, Pauline	17	Colfax	Kandiyohi.
Palm, Henry	10	Litchfield	Meeker.
Phillips, ——	23	Sibley	Sibley.
Perry, Minnie	...	Verndale	Wadena.
Quigley, William	...	Glencoe	McLeod.
Schill, Remige	18	St. Augusta	Stearns.
Sykora, John	12	Maple Lake	Wright.
Sykora, Stephen	10	Maple Lake	Wright.
Sykora, Charles	14	Maple Lake	Wright.
Swanson, Huldah	10	Red Wing	Goodhue.
Spreckels, Herman	14	Red Rock	Mower.
Sund, Eddie	14	Stanchfield	Isanti.
Thorne, Frank	10	St. Francis	Anoka.
Whitney, Jennie	6	Clinton Mills	Steele.
Wencel, Mary	20	Waseca	Waseca.
Woodearth, George	7	Utica	Winona.
Waltman, Drusilla	15	Shaskatan	Lincoln.
Ward, Mary S.	20	Elk Township	Nobles.
Wilson, Anna C.	12	Big Lake	Sherburne.
Wood, Jessie	12	New Richland	Waseca.

Total, 66; School age, 45.

STATEMENT OF EXPENDITURES OF THE SCHOOL FOR THE BLIND, FOR THE PERIOD OF THREE YEARS AND EIGHT MONTHS ENDING JULY 31, 1884. FROM THE TABULATION OF THE STATE BOARD OF CHARITIES AND CORRECTIONS.

Date of Closing of Period.	Number of days included in school term.	Average number of pupils.	Total current expenses.	Average expense per pupil.	Additions to property on hand, from "Current Expense Fund."	Total of "Current Expense Fund."
1881, Nov. 30......	266	26.80	$6,514.67	$242.15	$1,220.57	$7,735.24
1882, Nov. 30......	273	32.00	7,530.76	235.33	510.64	8,041.40
1883, July 31......	194	30.66	6,105.41	199.13	1,421.74	7,527.15
1884, July 31......	210	32.86	9,817.42	298.77	5,884.52	15,701.94

Average annual expense per pupil, for three years and eight months, $266.01.

REPORT OF THE SUPERINTENDENT

OF

SCHOOL FOR IDIOTS AND IMBECILES.

1882—1884.

OFFICERS AND TEACHERS.

	For 1883.	For 1884.
SUPERINTENDENT.	G. H. KNIGHT, M. D.	G. H. KNIGHT, M. D.
ASSISTANT, -		JOSEPH MASSEY.
MATRON.	MISS LOTTIE HELMER.	MISS LOTTIE HELMER.
TEACHERS.	MISS M. E. POWERS, “ HATTIE WILSON.	MISS M. E. POWERS, “ HATTIE WILSON.

REPORT

OF THE

Superintendent of School for Idiots and Imbeciles.

To the Directors:

I herewith submit the third biennial report of the Minnesota Training School for Idiots and Imbeciles. Seventy-five children have been connected with the institution during the past two years. The present number is sixty. The health of our children has been very good, but we have had more than our usual amount of sickness among the boys, due largely, I am convinced, to the overcrowded condition of their dormitories and sitting rooms, which was unavoidable, owing to the fact that the boys outnumber the girls nearly three to one. In the two years there have been five deaths.

One (1) from chronic bronchitis.
One (1) from galloping consumption.
One (1) from pneumonia.
One (1) from epilectic convulsions.
One (1) from specific disease.

The subject of the last mentioned cause was a little boy ten years of age, who came to us thoroughly diseased, and lived but a month after being received into the institution.

The progress of our children in school work has been exceedingly gratifying, and has realized our highest expectations. The record of the school-room work is as follows:

Nineteen (19) read cards.
Sixteen (16) read in the Primer.
One (1) reads in the Second Reader.
Six (6) read in the Third Reader.
Seven (7) learn spelling lessons.
Ten (10) write fairly well.
Fifteen (15) learn writing.
Thirteen (13) count ten.
Eight (8) count one hundred.
Eleven (11) learn simple rules on the numeral frame.
Two (2) learn from Colburn's First Lessons.
Three (3) learn written arithmetic.
Seven (7) learn geography from books.
Thirteen (13) learn geography orally.
Five (5) do plain sewing.
Five (5) outline Kensington.
Five (5) embroider on canvas.
Two (2) knit.
Two (2) crochet.
Eleven (11) weave mats.
Fifteen (15) weave kindergarten slats.
One (1) hammers brass.
Nineteen (19) learn drawing.
Eighteen (18) sing.
Twenty (20) dance.
Seven (7) do housework.
Fourteen (14) are mutes.
Five (5) are semi-mutes.

We have done our best for a feeble-minded person when we have made him self-respecting and self-supporting. Toward that end all our training, in school and out, tends. We do not expect our children to become students. Our "higher education" for this class is reached when they can put the lessons of application, attention, obedience and industry which they have learned in the schoolroom into practical use in the industrial arts, which must follow if we secure all the benefits possible to this class. When we can show fairly good carpenters, shoe makers, broom, brush and mattress makers, farm laborers, seamstresses, laundresses and chamber-maids, from among these children, we show one of the strongest arguments in favor of caring for imbeciles, even at what, to those who think of this class as simply "cumberers of the earth," looks like a large outlay of public moneys. That we can show such workmen and women, is abundantly proved in the older institutions, and, even in our own small family, after but five years of training, for those who have been here the longest, and beginning as we did, with so low a grade of imbecility as found its most fitting home in an insane asylum, we can show a good year's work.

Our five girls who can sew, have pieced and quilted four bed quilts as plain sewing, and have also done a variety of plain and fancy needle-work, which will compare favorably with that of any five normal children of the same age, with a similar amount of instruction. Our boys have learned the rudiments of mattress making, and the twenty-seven mattresses which they made, as lessons, are very creditable work. Besides this they have dug a sewer ditch from the bluff to the river, a distance of forty rods, and they have moved on wheelbarrows between three and four hundred wagon loads of earth to fill up a ravine which was widening too near our buildings. They have also done good service in the work of grading and sodding about the house. Two years ago in my report of this school, I urged upon you the necessity of taking some action in the matter of providing suitable shops for our older boys. What was a growing need *then*, is an imperative necessity *now*. Our boys have reached the age when they can best be taught manual labor, and lacking such teaching they will contract habits of idleness which it will be hard to counteract. Our winters are long, and outdoor work is impossible for the majority of them, so that after school hours they have, practically, nothing to occupy their time and attention.

When our new building, which is nearly ready for occupancy, is completed, we shall have at least thirty new boys, some of whom will be capable of doing some kind of useful labor, and I feel that I cannot urge too strongly the necessity of taking immediate steps toward furnishing us with the proper materials for beginning our industrial training at once. As I have said before, nothing so promotes the feeling of self-respect and real happiness among imbeciles as the fact that they are useful. Work is our most powerful agent in their improvement, and setting aside all humane considerations, that they can be taught to do something is one of the most convincing arguments that can be used in behalf of their care and education by the State.

Notwithstanding the fact that the legislature most generously responded to our appeal for more room, made two years ago, we must still cry "more," for our want of additional buildings has at no time been greater than it is at present. There is no need of argument in favor of supplying this lack. Our State has fully recognized the necessity of caring for the feeble minded, as shown by the immediate response to our former appeals. It is enough to state that our new building will accommodate fifty children. Our admitted applications over and above this number are thirty-five. But there is one grade of imbeciles for whom I wish to make an especial appeal. It is the class who have become of feeble mind because of epilepsia. They cannot with justice to other grades, as well as to themselves, be put with other children. The effects upon a nervous child, even of feeble-mind, of daily contact with convulsions, cannot be dwelt upon here; it is a proper subject for a medical paper, but the injurious effects, to my mind, cannot be calculated, nor is a building fitted for the needs of ordinary imbecility suitable in any way for the epileptic. They *must* be cared for by themselves, as I have stated to you once before.

It has been an open question for years whether the epileptic should be admitted into institutions for the feeble-minded, and in some States there is a law shutting out all such; and yet the fact that, by judicious medical treatment, and the strict attention to hygiene which can be compelled in an institution, a physician's efforts to alleviate the sufferings of these unfortunates is sometimes crowned with such success that a patient is cured, is a strong argument in favor of leaving no means untried to help those whose lives are of all others surely the saddest among God's creatures. As was well said in a recent discussion upon this subject: "When we make institutions for the feeble-minded simply custodial and educational, and refuse all cases which demand skillful scientific treatment, their management can be handed over to care-takers and teachers, and need no longer be under the charge of medical and scientific men." In our own institution, though all of this class have been helped by constant medical care, there has been but one cure; and yet, that there should have been one human being rescued from a state of loathsome, helpless and apparently hopeless imbecility, and sent to his home a bright, handsome, strong young man, with his intellect restored, and his health so firm that he is earning his own living, is surely worth *all* that Minnesota has done for the care of imbeciles during the past five years. Therefore, I wish most especially to urge the needs of this class. The imbecile will be taken care of. Public opinion, which realizes that like produces like, and that imbeciles, if left to themselves, give rein to all the baser passions and reproduce their kind; specialists in this work, who from pathological study show that there is a marked similarity between the brains of criminals and imbeciles, and who know that the criminal class is largely recruited from the ranks of the feeble-minded;—all show that the interests of the State are best met when this class is cared for so completely that the number of imbeciles and criminals shall not be augmented from among themselves. But the helpless idiot and epileptic needs the especial effort of the humanitarian, not to be overlooked. Our department for the care of these is already overcrowded. No matter how urgent the case, admission *must* be refused until further accommodations are furnished by the State. In making this especial appeal I do not mean to put the claims of epileptic above those of the imbecile. Of the two, the bright imbecile at large is by far more dangerous to the community than the epileptic who, in many instances, is simply a hospital case; and if but one class could be helped it should be, in every instance, the imbecile.

I simply wish to impress upon you the urgent need of more room for both classes, and that immediately. The claims of the imbecile who is capable of improvement—and under favorable influences, perhaps, self-support, or lacking these, further degradation,—come first. But second comes the epileptic, who, in the interests of ordinary humanity, is entitled to his one chance in a thousand of being restored to such a condition of health as shall make of him a rational, responsible human being.

I estimate for the fiscal year ending July 31, 1886, the sum of $27,000 will be needed, and for the fiscal year ending July 31, 1887, the same sum, provided our present accommodations are not increased.

Respectfully submitted,

G. H. Knight, Superintendent.

ADMISSION OF PUPILS.

Feeble-minded children, actual residents of the State of Minnesota for one year, who are not capable of being taught at public schools, and who are, in the opinion of the superintendent proper subjects for this institution, may be received under the following conditions:

First — That their admission meet with the approval of the board of directors.

Second — That the sum of forty dollars ($40) per annum for clothing and necessary expenses be provided by the parents, or guardians, or in case of indigence, by the county in which the child resides.

Third — That the bond for parents or guardians and certificate for counties shall be properly filled out in advance.

Application for admission of pupils, and all general correspondence should be directed to

G. H. Knight, M. D.,
Faribault, Minn.

TABULATED STATEMENT

SHOWING THE EXPENSE PER PUPIL SINCE ITS ORGANIZATION.

YEAR.	Average number of inmates.	Total number days each.	Total days board furnished.	Total current expenses.	Average expense per pupil.	Additions to property on hand from Current Fund.
1879	15.87	160	2,539	$3,546.72	$223.46	$1,155.00
1880	20.85	366	7,631	4,965.94	238.17	333.66
1881	22.01	334	7,396	6,816.61	308.44	1,990.03
1881–1882	29.81	365	10,880	8,254.57	276.90	2,218.37
1882–1883	36.81	243	8,946	6,544.80	177.79	640.00
1883–1884	46.85	366	17,147	10,836.81	231.31	1,953.46

BIENNIAL REPORT

OF THE

ATTORNEY GENERAL

OF

MINNESOTA,

FOR THE PERIOD OF

TWENTY MONTHS, ENDING JULY 31, 1884.

WILLIAM J. HAHN, Attorney General.

ST. PAUL, MINN.:
THE PIONEER PRESS COMPANY.
1884.

REPORT.

State of Minnesota,
Attorney General's Office,
August 1, 1884.

His Excellency, L. F. Hubbard, Governor of Minnesota,

Sir: In accordance with the statutes I have the honor to herewith submit my official report for the period between December 1, 1882, and July 31, 1884.

The following comprises a list of the cases commenced and disposed of since the date of my last report.

CRIMINAL ACTIONS IN THE SUPREME COURT.

The State vs. L. Brin, Jr. Indicted for larceny of railroad tickets. Appeal from the judgment of conviction by the district court of Otter Tail county. The judgment was affirmed.

The State vs. John P. Pickles. Indictment for selling intoxicating liquors without a license in the district court of Lyon county. An appeal was taken from the judgment convicting him of the offense, and the judgment was affirmed.

The State vs. Geo. A. Clark. The defendant was tried and convicted for using obscene language. From the judgment entered thereon an appeal was taken, and deeming the conviction clearly erroneous I declined to argue the case. The judgment was reversed.

The State vs. Bur Longdon. Indicted for selling liquor without a license. Appeal from the order of the district court of Nobles county denying defendant's motion for a new trial. This order was affirmed.

The State vs. Ole Sorenson. The defendant was indicted in Ramsey county for murder; found guilty of manslaughter in the second degree and the case removed to the Supreme Court on writ of error. The judgment of conviction was affirmed.

The State vs. Brown and Horan. Indicted for robbery, convicted and judgment thereon entered in district court of Ramsey county. The judgment was affirmed.

CIVIL ACTIONS IN THE SUPREME COURT.

The State vs. The Northern Pacific Railroad. This action was referred to in my last report (page 7). Since then it was tried in the district court, judgment ordered for the State, a motion for a new trial made and denied, and the case taken to the Supreme Court for review. It was there argued and on July 18, 1884, an opinion was filed affirming the decision of the court below.

On May 15, 1883, Charles D. Wright, claiming to have purchased a portion of the school land covered by the certificate issued to B. N. Johnson, which was canceled and annulled by the district court of Ramsey county, (referred to on page 7 of my previous report,) obtained from the district court of Otter Tail county an alternative writ of mandamus on the county auditor of that county to compel an entry to be made on the auditor's books of the fact of such sale—no such entry having been made. Prior to that an application had been made to the State Auditor for a certificate, but on my advice it had been refused. At the request of the State Auditor I appeared in the case and the alternative writ was quashed. An appeal was taken to the Supreme Court and the order was, by that court, affirmed. The land involved is valuable—adjoining the flourishing town of Fergus Falls.

James K. O'Brien, claiming the balance of the land covered by the Johnson certificate, obtained a similar writ and his case was disposed of at the same time and in a similar manner.

The State, ex rel. David L. Powell vs. The State Medical Examining Board. This proceeding was commenced in the district court of Ramsey county to compel the issuance to the relator of the certificate provided for in sec. 2 of chap. 125, General Laws 1883, the board having refused to grant the same, because, as it claimed, the relator had been guilty of unprofessional and dishonorable conduct. The constitutionality of the medical practice act was involved in the case. The preliminary writ of mandamus was quashed, an appeal was taken by the relator to the Supreme Court, and the order was affirmed.

The various constitutional amendments, proposed by the last legislature, and adopted by the people, providing biennial elections and changing the terms of various offices, gave rise to many serious questions, and at one time promised considerable litigation and no small amount of trouble. Fortunately, however, an opportunity arose, soon after the issuance of the governor's proclamation announcing the adoption of the amendments, whereby an authoritative settlement of some of these questions could be made. A dispute arose between the outgoing and incoming treasurer of Olmsted county, as to when the term of the former ended, and that of the latter began. A writ of *quo warranto* was issued by the Supreme Court on my relation to test the question, and while the ground covered by that case was meagre, and did not, necessarily, call for the exposition of the various amendments, nevertheless, the court, on account of the grave public importance of the matter and on my urgent solicitation on account thereof, proceeded to, and did in that case, authoritatively settle most, if not all, of the doubts surrounding the interpretation of these various changes in the organic law.

CRIMINAL CASES IN THE DISTRICT COURT.

At the request of the county attorney of Rice county, I assisted in the trial of the case of State vs. Sage, indicted for the murder of the chief of police of the city of Faribault. The defense was self-defense, the officer attempting to arrest the defendant without a warrant and in an illegal manner. He was convicted of manslaughter in the fourth degree.

At the request of the attorney appointed by the court to prosecute the case of State vs. Roy, indicted in Marshall county, for murder in the first degree, I sent E. M. Card, Esq., to assist in trying the case. The defendant was found guilty as charged.

The county attorney of Douglas county having called on me to assist in the prosecution of the case of State vs. Thompson, indicted for murder, I consented to do so, but at the last moment was prevented by the burning of the State prison from complying, and sent E. M. Card, Esq., in my place. The defendant was convicted of manslaughter in the second degree.

I was personally prevented by engagements in the Supreme Court, from complying with a request from the county attorney of Chisago county, to take part in the trial of State vs. Nord, and again sent E. M. Card, Esq. The defendant was indicted for murder in the first degree and convicted of that offense.

I also, by reason of official engagements demanding my pressence here, sent E. M. Card, Esq., to assist the county attorney of Todd county, in prosecuting the case of State vs. Sully, indicted in that county for murder. The defendant was convicted of manslaughter in the second degree.

CIVIL ACTIONS IN THE DISTRICT COURTS.

State vs. Merriman, Barrows & Co.
Trespass on State lands. Settled.

State vs. J. B. Bassett.
Trespass on State lands. Judgment entered in favor of the State.

State vs. James Mathews.
Trespass on State lands. Settled.

State vs. Josiah Jones et als.
Trespass on State lands. Settled.

State vs. W. N. Allen et al.
Trespass on State lands. Settled.

State vs. C. H. Douglass.
Trespass on State lands. Still pending.

State vs. Beede & Bray.
Trespass on State lands. Still pending.

State vs. Jackson et al.
Trespass on State lands. Still pending.

State vs. John J. Ring et als.
Action on bond of county treasurer provided for by sec. 36 of chap. 38. Judgment was entered and the amount due the State collected.

An action was commenced in the United States Circuit Court against the assignee of the Pine City Lumber Company and one

W. A. Merriam, for the purpose of securing the amount due the State from the said bankrupt, out of certain moneys paid into that court, by order of the court, and which moneys said Merriam claimed to be entitled to. The action has been tried and is still pending.

I also appeared in opposition to an application made in the district court of St. Louis county to condemn certain school lands for boom purposes. Before reaching a trial the matter was abandoned by the petitioners.

At the request of the board of regents of the University of Minnesota, an application was made to the district court of Hennepin county for the appointment of commissioners to appraise the damage for the taking of certain lands, proposed to be taken for university purposes. The commissioners were appointed, an appraisal made and appeals taken from the award to the court. Before the trials were finally concluded, an amicable arrangement was made between the board and the land owners.

The case of the State vs. The St. Paul, Minneapolis & Manitoba Railroad Company, pending in the Supreme Court at the date of my last report, has been decided adversely to the State.

Auditors' warrants for stumpage on State lands, to the amount of $56,323.05, were placed in my hands for collection. The entire amount has been paid into the treasury except the sum of $3,808.37, for which suits are now pending.

REPORTS OF COUNTY ATTORNEYS.

I am obliged to close my report with twenty-nine (29) counties from which no reports have been received for 1883, viz.: Aitkin, Becker, Blue Earth, Carver, Clay, Cook, Cottonwood, Crow Wing, Dakota, Faribault, Goodhue, Grant, Jackson, Kittson, Lake, Marshall, Meeker, Nicollet, Pipe Stone, Ramsey, Renville, Rice, Rock, Sherburne, Sibley, Swift, Traverse, Watonwan and Wilkin. In 1881 nineteen (19) counties failed to report; and in 1882 thirty-two (32) counties. No satisfactory estimate of the criminal business of the State can be made, when such counties as Ramsey, Rice, Goodhue, Dakota, Nicollet, and others almost as important, are wholly omitted. The system of reports should either be abandoned altogether, or a compliance with the law enforced by an adequate penalty. There is no method provided by which any estimate even approximately correct can be given of the costs of prosecutions, and in consequence thereof they are wholly omitted from some of the reports, and the statement of this item given in others is so utterly unreliable and unsatisfactory that no trustworthy conclusion can be drawn from them. I would again call attention to the recommendation of my predecessor, Judge Start, on this subject, to be found on pages 11 and 12 of my former report.

Schedule A, attached to this report, contains abstracts of reports of the county attorneys, made to this office, for the year ending November 25, 1883. These reports show that the total number of prosecutions reported to this office is 652; convictions, 435; acquittals, 89; nolle prosequi, 73. The number and result of the more important cases is shown by the following abstract compiled from the reports of the county attorneys:

OFFENSE.	Number.	Convictions.	Acquittals.	Nolle pros.	Still pending.
Offenses against life and person —					
Murder in first degree	5	3	1	1	
Murder in second degree	1	1			
Manslaughter in second degree	3	2	1		
Manslaughter in third degree	3			1	2
Manslaughter in fourth degree	3	2	1		
Assault with intent to kill	8	3	2	1	2
Assault with intent to do great bodily harm	23	10	6	3	*1
Assault and battery	160	143	14	3	
Robbery	7		5	2	
Assault with intent to maim	1		1		
Mayhem	1			1	
Abusive language	11	10		1	
Offenses against property —					
Arson	8	4	1	3	
Burglary	23	15	4	2	2
Larceny	169	125	28	15	1
Embezzlement	5	2	1	1	
Obtaining goods under false pretenses	7	3	1	1	2
Selling mortgaged property	1		1		
Willful trespass	5	5			
Malicious mischief	13	9	2	2	
Forgery	10	8		1	1
Offenses against public justice —					
Compounding felony	2		2		
Breaking jail	4	1		3	
Offenses against public policy —					
Gambling	5	4		1	
Cruelty to animals	2	2			
Offenses against chastity, morality and decency—					
Adultery	6	3	1	2	
Seduction	2			1	1
Keeping house of ill fame	7	3		4	
Rape	14	3	3	5	2
Assault with intent to commit rape	1		1		
Bastardy	4	3		1	
Incest	1			1	
Sabbath-breaking	14	14			
Disturbing public worship	2	2			
Bigamy	2		1	1	
Violation of liquor laws	85	53	13	16	3

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* Three not given.

By chapter 129 of the General Laws of 1883 the Secretary of State, under the direction of the Attorney General, was authorized to contract for the printing and furnishing to the State of five hundred copies of the opinions of the Attorneys General at a price not to exceed $3.50 per copy. A contract was made with the West Publishing Company, of St. Paul, for doing this work, and in May, 1884, the contract was completed. The work includes all the opinions of the several Attorneys General from the organization of the State to January 1, 1884, which, in my opinion, were of sufficient importance to warrant their publication. This book cannot but prove valuable to all public officers, State, county and district. The work was performed under the supervision of, and the index to the same was prepared by, E. F. Lane, Esq., the clerk in this office.

In my last report I called attention to the incongruous condition of our laws on the subject of larceny, by which simple larceny may be punished by imprisonment for seven years while the maximum punishment for a larceny accompanied by the aggravation of entering a dwelling house is only three years. Notwithstanding this fact the legislature, at its last session, reenacted this absurd statute. The maximum punishment for larceny from the person is but four years. And in burglary, the offender not being armed nor arming himself with a dangerous weapon, the matter of punishment is limited to five years. It would seem, then, that in Minnesota, so far at least as larceny is concerned, the punishment decreases in the ratio of the increase of the enormity of the offense.

Our entire criminal code, if code it can be called, needs a thorough overhauling and revision. To call attention to all the defects in the statutes relating to criminal jurisprudence would extend this report beyond all reasonable limits. It is to be hoped that this subject may receive the early attention of the legislature at the ensuing session.

The law relating to the entry of judgment for delinquent personal property taxes is so defective as to almost amount to nothing. As the law now stands the citation issued must be made returnable on the first day of the next general term and no authority is given for issuing a second citation in case the first is not, for any reason served. Authority should be given to issue a citation at any other time, returnable to any term of the court in case service on the defendant is not secured. Again, in case the delinquent tax payer has removed to another county, and refuses to pay, there would seem to be no authority either to levy a distress on his goods or to cite him before the court to show cause why a judgment should not be entered against him. A bill providing for such a contingency, and for other defects in the law relating to the collection of delinquent personal property taxes, was prepared by the Public Examiner with my assistance and presented to the last legislature, but failed to receive the approval of the two houses. I would refer to that bill for suggestions as to the remedy.

By section 44, chapter 11, it is provided that the county auditor shall keep an accurate journal or record of the proceedings and orders of the county board of equalization, "*showing the facts and evidence upon which their action is based.*" Now, I confidently submit that the requirement that the *evidence* shall be kept and spread upon the record is a requirement almost impossible of fulfillment, unless these officers are to be supplied with short-hand reporters. It is believed that there is not a solitary instance in the State where this has been done; and in one case, at least, coming under my own observation, the entire tax of several persons was declared illegal, because of the absence from the record of the evidence on which the board based their increase of the assessment. If this decision is correct, every increase or decrease made by the county board is illegal and inoperative, unless the record discloses the evidence upon which the board base their action—and this whether it be the raising or lowering of a town or an individual. The collection of the revenue should be made as simple and require as little as the necessities of the case and the protection of the citizen may require. I would therefore recommend that the clause "showing the facts and evidence upon which their action is based" be expunged from the law.

Section 26 of chapter 11 attempts to secure the payment of taxes on bank stock, but is too indefinite and vague to be successfully executed. The county treasurer is authorized to sell the shares or interest of the delinquent taxpayer to pay the tax "like other personal property;" we are left in the dark as to how he or the purchaser at the sale is to ascertain what is being sold and bought, or as to how the treasurer is to attach and hold such interest until after the sale. It would seem to be a much simpler and more effective way to make the bank itself primarily liable for such tax and leave it to settle with its stockholders, or to make such a tax a lien upon the share or shares of the owner from and after May 1, or if it is thought best to continue the present system a simple method should be prescribed by which the treasurer may authoritatively ascertain the interest he proposes to levy upon and by which he may attach and hold such interest pending the sale. Respectfully submitted,

WILLIAM J. HAHN, Attorney General.

SCHEDULE A.

ABSTRACTS

OF

REPORTS OF COUNTY ATTORNEYS,

FOR THE YEAR ENDING NOV. 15, 1883.

ANOKA COUNTY.

D. L. BUGBEE, *County Attorney.*

Number of persons prosecuted, 8.

Charged with.	Number.	Convictions	Acquittals.	Nolle Pros.	Punishment.
Assault with intent to kill	1	......	1	......	
Larceny	1	1	......	......	Under 7 years.
Violation of liquor laws	6	6	......	......	Fined $165; paid.

BENTON COUNTY.

J. A. SENN, *County Attorney.*

Number of persons prosecuted, 8.

Charged with.	Number.	Convictions	Acquittals.	Nolle Pros.	Punishment.
Larceny	2	1	......	1	Imprisonment in county jail.
Assault with intent to harm	2	......	......	......	Result or punishment not given.
Assault and battery	3	2	1	......	1 county jail; other not given. 1 under influence of liquor.
Malfeasance in office	1	......	......	1	

BIG STONE COUNTY.

T. M. **Grant**, *County Attorney.*

Number of persons prosecuted, 1.

Charged with.	Number.	Convictions	Acquittals.	Nolle Pros.	Punishment.
Murder in second degree	1	1	......	......	Imprisonment for life.

BROWN COUNTY.

Francis Baasen, *County Attorney.*

Number of person prosecuted, 23.

Charged with.	Number.	Convictions	Acquittals.	Nolle Pros.	Punishment.
Larceny	1	1	......	......	Imprisonment county jail.
Attempted forgery	1	1	......	......	Under 7 years.
Assault and battery	3	3	......	......	2 imprisonment county jail; 1 fined $15; paid.
Violation of liquor laws	1	......	1	......	
Malicious mischief	3	3	......	......	2 imprisonment county jail; 1 fined $19; paid.
Sabbath-breaking	14	14	......	......	Fined $7; paid.

CARLTON COUNTY.

H. H. **Hawkins**, *County Attorney.*

Number of persons prosecuted, 9.

Charged with.	Number.	Convictions	Acquittals.	Nolle Pros.	Punishment.
Arson	3	......	......	3	
Robbery	2	......	2	......	
Rape	4	......	......	4	

CHIPPEWA COUNTY.

OWEN J. WOOD, *County Attorney.*

Number of persons prosecuted, 5.

Charged with.	Number.	Convictions	Acquittals.	Nolle Pros.	Punishment.
Larceny	1	1	......	......	Imprisonment county jail.
Assault and battery	2	2	......	......	Fined $10; paid.
Violation of liquor laws	1	1	......	.....	Fined $25; paid.
Violation of gaming laws	1	1	......	......	Fined $5; paid.

CHISAGO COUNTY.

E. C. NORGOOD, *County Attorney.*

Number of persons prosecuted, 3.

Charged with.	Number.	Convictions	Acquittals	Nolle Pros.	Punishment.
Murder in first degree	1	1	......	......	State prison for life.
Arson	1	1	......	......	State reform school.
Larceny in office	1	1	......	......	State prison under seven years.

DODGE COUNTY.

R. A. MOSES, *County Attorney.*

Number of persons prosecuted, 13.

Charged with.	Number.	Convictions	Acquittals.	Nolle Pros.	Punishment.
Assault and battery	4	2	2	......	Fined $10; paid.
Violation of liquor laws	7	5	1	1	Fined—total $250; paid.
Rape	2	......	......	1	Result as to one not given.

DOUGLAS COUNTY.

H. JENKINS, *County Attorney.*

Number of persons prosecuted, 11.

Charged with.	Number.	Convictions	Acquittals.	Nolle Pros.	Punishment.
Larceny	3	2	1	......	Two under influence of liquor.
Assault with weapons	2	2	......	......	One under influence of liquor.
Assault and battery	5	5	......	......	Two under influence of liquor.
Violation of gaming laws	1	1	......	......	[Punishment of none of these given.]

FILLMORE COUNTY.

N. KINGSLEY, *County Attorney.*

Number of persons prosecuted, 18.

Charged with.	Number.	Convictions	Acquittals.	Nolle Pros.	Punishment.
Burglary	1	1	......	......	State prison under seven years.
Larceny	1	......	1	......	
Assault and battery	3	3	......	......	Fined $15; paid.
Violation of liquor laws	12	6	......	6	Total fines $200; paid.
Rape	1	1	......	......	State prison.

FREEBORN COUNTY.

JOHN WHYTOCK, *County Attorney.*

Number of persons prosecuted, 5.

Charged with.	Number.	Convictions	Acquittals.	Nolle Pros.	Punishment.
Larceny	2	2	......	......	Imprisonment county jail.
Assault and battery	1	1	......	......	Fined $75; paid.
Violation of liquor laws	2	2	......	......	Fined $50; paid.

HENNEPIN COUNTY.

JOHN G. WOOLLEY, *County Attorney.*

Number of persons prosecuted, 89.

Charged with.	Number.	Convictions	Acquittals.	Nolle Pros.	Punishment.
Burglary	6	4	1	1	4 state prison under 7 years each.
Larceny	48	32	5	11	29 state prison under 7 years each. 2 imprisonment county jail. 1 sentence suspended at date of report.
Forgery	1	1	......	......	State prison under 7 years.
Robbery	3	......	1	2	
Assault with dangerous weapon	3	......	2	1	
Violation of liquor laws	16	6	6	4	6 fined.
Obtaining goods under false pretenses.	1	1	......	......	Sentence suspended at date of report.
Bigamy	1	......	1	......	
Adultery	3	2	......	1	2 state prison under 7 years.
Keeping house of ill-fame	5	1	......	4	1 state prison under 7 years.
Embezzlement	2	1	1	......	1 state prison under 7 years.

HOUSTON COUNTY.

C. S. TRASK, *County Attorney.*

Number of persons prosecuted, 20.

Charged with.	Number.	Convictions	Acquittals.	Nolle Pros.	Punishment.
Assault with intent to kill	1	......	......	......	
Burglary	1	1	......	......	State prison under 7 years.
Larceny in dwelling house	2	2	......	......	State prison under 7 years.
Larceny	1	1	......	......	Imprisonment county jail.
Assault and battery	10	10	......	......	Fined; total, $120; paid.
Violation of liquor laws	1	1	......	......	Fined $25; paid.
Malicious mischief	1	......	......	1	
Bastardy	3	3	......	......	Settled by parties.

ISANTI COUNTY.

G. W. NESBITT, *County Attorney.*

Number of persons prosecuted, 3.

Charged with.	Number.	Convictions	Acquittals.	Nolle Pros.	Punishment.
Larceny	1	1	......	......	State prison under 7 years.
Assault and battery	2	1	1	......	1 fined $5; paid.

KANABEC COUNTY.

Myron R. Kent, *County Attorney.*

Number of persons prosecuted, 1.

Charged with.	Number.	Convictions.	Acquittals.	Nolle Pros.	Punishment.
Resisting officer	1	1	......	......	Imprisonment county jail, and fined $10; paid.

KANDIYOHI COUNTY.

P. M. Quist, *County Attorney.*

Number of persons prosecuted, 13.

Charged with.	Number.	Convictions	Acquittals.	Nolle Pros.	Punishment.
Assault with dangerous weapon	1	1	......	......	Committed to insane hospital.
Larceny	6	5	1	......	1 st. pris. under 7 years; 2 county jail; 2 fined; total fines $127; $42 paid.
Assault and battery	4	3	......	1	Not given.
Violation of liquor laws	1	1	......	......	Not given.
Cruelty to animals	1	1	......	......	Not given.

LAC QUI PARLE COUNTY.

J. C. Pope, *County Attorney.*

Number of persons prosecuted, 3.

Charged with.	Number.	Convictions	Acquittals.	Nolle Pros.	Punishment.
Assault and battery	2	2	......	......	Fined $10; paid.
Violation of liquor laws	1	......	1	......	

LE SUEUR COUNTY.

THOMAS HESSIAN, *County Attorney.*

Number of persons prosecuted, 26.

Charged with.	Number.	Convictions	Acquittals.	Nolle Pros.	Punishment.
Assault with intent to kill.	1	......	......	......	Pending at date of report.
Burglary (3 in R. R. car	5	3	2	......	1 State prison under 7 years; 2 sentence suspended.
Larceny	2	2	......	......	2 imprisonment county jail and fined.
Assault and battery	6	5	1	......	5 fined; total fines $30; paid.
Violation of liquor laws	7	5	......	......	2 pending; others fined; total paid, $200.
Bigamy	1	.....	......	1	
Abusive language	2	2	......	......	Fined $10; paid.
Obstructing highways	2	1	1	......	Fined $5; paid.

LINCOLN COUNTY.

JOHN LEWIS CASS, *County Attorney.*

Number of persons prosecuted, 14.

Charged with.	Number.	Convictions	Acquittals.	Nolle Pros.	Punishment.
Assault with intent to rape	2	......	1	1	
Assault and battery	3	2	......	1	Fined $5; paid.
Rape	1	......	1	......	
Obtaining goods under false pretenses	2	......	1	......	1 out of State.
Violation of gaming laws	2	......	......	2	
Bastardy	1	......	......	1	
Breach of the peace	1	......	......	1	
Compounding felony	2	......	......	2	

LYON COUNTY.

A. C. FORBES, *County Attorney.*

Number of persons prosecuted, 9.

Charged with.	Number.	Convictions	Acquittals.	Nolle Pros.	Punishment.
Assault with intent to kill	1	1	......	......	Convicted of assault and fined $100.
Larceny	2	2	......	......	2 state prison under 7 years.
Assault and battery	1	1	......	......	Fined $5; paid.
Violation of liquor laws	5	5	......	......	Fined; total fines paid $300.

MARTIN COUNTY.

J. L. Higgins, *County Attorney.*

Number of persons prosecuted, 5.

Charged with.	Number.	Convictions.	Acquittals.	Nolle Pros.	Punishment.
Larceny	1	1	......	......	Fined $10; paid.
Violation of liquor laws	1	......	1	......	
Violation of gaming laws	1	1	......	......	Fined $20; paid.
Abusive language	2	1	1	......	Fined $10; paid.

MILLE LACS COUNTY.

J. L. Brady, *County Attorney.*

Number of persons prosecuted, 6.

Charged with.	Number.	Convictions.	Acquittals.	Nolle Pros.	Punishment.
Murder in first degree	1	1	......	......	State prison for life.
Assault and battery	4	4	......	......	Not given.
Malicious mischief	1	1	......	......	Appealed to district court.

MORRISON COUNTY.

D. T. Calhoun, *County Attorney.*

Number of persons prosecuted, 4.

Charged with.	Number.	Convictions.	Acquittals.	Nolle Pros.	Punishment.
Assault with intent to do great bodily harm	1	1	......	......	Fined $200; paid.
Larceny	2	2	......	......	1 state prison under 7 yrs; $100; paid.
Rape	1	1	......	......	State prison under seven years.

MOWER COUNTY.

J. M. GREENMAN, *County Attorney.*

Number of persons prosecuted, 10.

Charged with.	Number.	Convictions.	Acquittals.	Nolle Pros.	Punishment.
Larceny from dwelling	1	1	......	......	Imprisonment county jail 3 months.
Larceny	3	2	1	......	One under influence of liquor; fined $35; paid.
Assault and battery	5	5	......	......	Total fines paid, $35.
Incest	1	......	......	1	No indictment found.

McLEOD COUNTY.

A. P. FITCH, *County Attorney.*

Number of persons prosecuted, 7.

Charged with.	Number.	Convictions.	Acquittals.	Nolle Pros.	Punishment.
Larceny	1	......	1	......	
Assault and battery	4	3	1	......	One imprisoned county jail; two fined $100; paid.
Violation of liquor laws	1	......	1	......	
Rape	1	1	......	......	State prison over seven years.

MURRAY COUNTY.

H. C. GRASS, *County Attorney.*

Number of persons prosecuted, 4.

Charged with.	Number.	Convictions.	Acquittals.	Nolle Pros.	Punishment.
Larceny	2	......	1	1	
Assault and battery	1	1	......	......	Under influence of liquor; fined $25; paid.
Violation of liquor laws	1	......	......	1	

NOBLES COUNTY.

George W. Wilson, *County Attorney.*

Number of persons prosecuted, 10.

Charged with.	Number.	Convictions.	Acquittals.	Nolle Pros.	Punishment.
Manslaughter in second degree	1	......	1	......	
Larceny	2	1	1	......	State prison under 7 years.
Assault and battery	1	......	1	......	
Violation of liquor laws	6	1	1	4	Fined $25.

NORMAN COUNTY.

G. A. Lane, *County Attorney.*

Number of persons prosecuted, 14.

Charged with.	Number.	Convictions.	Acquittals.	Nolle Pros.	Punishment.
Assault and battery	4	4	......	......	Fined $50; paid $40.
Violation of liquor laws	1	......	1	......	
Obtaining goods under false pretenses	1	......	......	1	
Violation of gaming laws	1	1	......	......	Fined $75; paid.
Willful trespass on buildings	4	4	......	......	Fined $60; paid $45.
Breaking jail	3	......	......	3	

OLMSTED COUNTY.

Frank B. Kellogg, *County Attorney.*

Number of persons prosecuted, 23.

Charged with.	Number.	Convictions.	Acquittals.	Nolle Pros.	Punishment.
Murder in first degree	2	......	1	1	
Arson	1	......	1	......	
Larceny	7	7	......	......	3 state prison under 7 years; 3 state reform school; 1 fined $5; paid.
Assault and battery	9	9	......	......	Imprisonment county jail or fined; total fines $97; paid.
Indecent language	1	1	......	......	Fined $15; paid.
Cruelty to animals	1	1	......	......	Fined $10; paid.
Disturbing meeting	2	2	......	......	Fined $20; paid.

OTTER TAIL COUNTY.

E. E. CORLISS, *County Attorney.*

Number of persons prosecuted, 14.

Charged with.	Number.	Convictions.	Acquittals.	Nolle Pros.	Punishment.
Arson	1	1	......	......	State prison under 7 years.
Larceny	5	3	2	......	Not given.
Assault and battery	4	4	......	......	Fined; total fines paid, $80.
Violation of liquor laws	1	1	......	......	Fined $25; paid.
Breaking open railroad car	3	......	3	......	

PINE COUNTY.

JOHN D. WILCOX, *County Attorney.*

Number of persons prosecuted, 1.

For larceny — Acquitted.

POLK COUNTY.

WILLIAM WATTS, *County Attorney.*

Number of persons prosecuted, 9.

Charged with.	Number.	Convictions.	Acquittals.	Nolle Pros.	Punishment.
Assault with dangerous weapon with intent to do harm	3	1	2	......	Fined $200; paid; committed under influence of liquor.
Larceny	4	3	1	......	3 state prison under 7 years.
Forgery	1	1	......	......	State prison under 7 years.
Keeping house of ill-fame	1	1	......	......	Fined $200; paid.

POPE COUNTY.

F. T. OFSTHUM, *County Attorney.*

Number of persons prosecuted, 7.

Charged with.	Number.	Convictions.	Acquittals.	Nolle Pros.	Punishment.
Assault and battery	2	2	......	......	Fined $10; paid.
Violation of liquor laws	5	5	......	......	Fined; total fines $175; paid.

REDWOOD COUNTY.

M. E. POWELL, *County Attorney.*

Number of persons prosecuted, 3.

Charged with.	Number.	Convictions.	Acquittals.	Nolle Pros.	Punishment.
Assault with intent to kill	1	......	......	......	Indictment pending.
Larceny	1	......	1	......	
Assault and battery	1	1	......	......	Fined $5; paid.

SCOTT COUNTY.

JAMES M. HALE, *County Attorney.*

Number of persons prosecuted, 14.

Charged with.	Number.	Convictions.	Acquittals.	Nolle Pros.	Punishment.
Larceny	5	5	......	......	2 under 7 years in prison; 3 fined; fines paid, $15.
Assault and battery	5	3	2	......	Fined $15; paid.
Malicious mischief	3	2	1	......	Fined $20; paid $5.
Abusive language	1	......	......	1	

STEARNS COUNTY.

D. B. SEARLE, *County Attorney.*

Number of persons prosecuted, 43.

Charged with.	Number.	Convictions.	Acquittals.	Nolle Pros.	Punishment.
Manslaughter in second degree	2	2	......	......	Under 7 years' imprisonment; done under influence of liquor.
Assault with intent to do great bodily harm	2	1	......	1	Imprisoned in county jail.
Burglary	3	1	......	1	Imprisoned in state prison under 7 yrs.
Larceny	13	13	......	......	5 imp. in county jail; bal. not given.
Horse stealing	1	1	......	......	State prison under 7 years.
Assault and battery	15	15	......	......	3 imprisoned county jail; fined $136; total fines paid, $130; 11 under influence of liquor.
Violation of liquor laws	1	1	......	......	Fined $25; paid.
House-breaking	1	......	......	......	Pending.
Rape	2	......	......	......	Pending.
Malicious mischief	1	1	......	......	Fined $5; paid.
Adultery	1	......	1	......	
Keeping house of ill-fame	1	1	......	......	Not given.

STEVENS COUNTY.

C. L. **Brown**, *County Attorney.*

Number of persons prosecuted, 8.

Charged with.	Number.	Convictions.	Acquittals.	Nolle Pros.	Punishment.
Larceny	3	1	1	1	1 Sentence suspended.
Violation of liquor laws	1	1	......	......	Fined $12.50; paid $10.
Rape	1	......	1	......	
Obtaining goods under false pretenses.	1	......	......	1	
Embezzlement	1	1	......	......	Penitentiary under 7 years.
Bastardy	1	......	......	1	

STEELE COUNTY.

W. F. **Sawyer**, *County Attorney.*

Number of persons prosecuted, 12.

Charged with.	Number.	Convictions.	Acquittals.	Nolle Pros.	Punishment.
Larceny from persons	1	......	......	......	Disagreement of jury; pending.
Assault and battery	7	5	1	1	Fines $40; paid.
Embezzlement	1	......	......	1	
Using obscene language	2	2	......	......	Fined $20; paid.
Disposing of glandered horses	1	......	1	......	

ST. LOUIS, LAKE AND COOK COUNTIES.

D. G. **Cash**, *County Attorney.*

Number of persons prosecuted, 17.

Charged with.	Number.	Convictions.	Acquittals.	Nolle Pros.	Punishment.
Assault with intent to do great bodily harm	7	4	1	2	2 under 7 years' imprisonment; 2 imprisoned in county jail and fined $50.
Larceny	3	1	2	......	Under 7 years' imprisonment.
Robbery	2	......	2	......	
Assault with intent to rape	1	......	1	......	
Obtaining money under false pretenses	1	1	......	......	Under 7 years' imprisonment.
Breaking jail	1	1	......	......	Imprisonment county jail.
Mayhem	1	......	......	1	
Assault with intent to maim	1	......	1	......	

TODD COUNTY.

H. H. CROWELL, *County Attorney.*

Number of persons prosecuted, 5.

Charged with.	Number.	Convictions.	Acquittals.	Nolle Pros.	Punishment.
Assault and battery	2	2	......	......	Fined $10; paid.
Violation of liquor laws	3	3	......	......	Fined $50; licenses revoked; paid.

WABASHA COUNTY.

J. F. McGOVERN, *County Attorney.*

Number of persons prosecuted, 11.

Charged with.	Number.	Convictions.	Acquittals.	Nolle Pros.	Punishment.
Manslaughter in the fourth degree	2	1	1	......	Fined $250; paid.
Attempt to commit arson	1	1	......	.....	Under seven year's imprisonment.
Larceny	2	1	1	......	Fined $50; paid.
Criminal libel	3	......	1	2	
Obstructing highway	1	......	1	......	
Larceny in railroad car	2	2	.....	......	Fined $50; paid $25.

WADENA COUNTY.

C. A. CONILLARD, *County Attorney.*

Number of persons prosecuted, 5.

Charged with.	Number.	Convictions.	Acquittals.	Nolle Pros.	Punishment.
Burglary	1	1	......	......	Impris'nm't, state prison, under 7 yrs.
Uttering forged notes	2	......	......	1	One pending,
Assault with intent to do great bodily harm	1	......	1	......	
Fraudulent disposition of mortgaged property	1	......	1	......	

WASECA COUNTY.

WILLIAM R. KINDER, *County Attorney.*

Number of persons prosecuted, 28.

Charged with.	Number.	Convictions.	Acquittals.	Nolle Pros.	Punishment.
Manslaughter in third degree	3	......	......	1	2 Pending.
Larceny	8	5	3	......	1 Under 7 years state prison; 4 imprisonment in county jail.
Assault and battery	10	8	2	......	2 Imprisoned county jail; 6 fined; paid.
Violation of game laws	1	......	......	1	
Abusive and obscene language	5	5	......	......	5 Fined; paid.
Assault with dangerous weapon	1	......	......	......	Pending.

WASHINGTON COUNTY.

IRA W. CASTLE, *County Attorney.*

Number of persons prosecuted, 24.

Charged with.	Number.	Convictions.	Acquittals.	Nolle Pros.	Punishment.
Murder in first degree	1	1	......	......	State Prison for life.
Burglary	2	2	......	......	Under 7 years state prison,
Larceny	9	9	......	......	4 Under 7 years state prison; 4 county jail; 1 fined $50; paid.
Forgery	2	2	......	......	2 Under 7 years state prison.
Assault and battery	7	7	......	......	1 Imprisoned county jail; 6 fined $80; paid.
Violation of liquor laws	1	1	......	......	Fined $25; paid.
Adultery	1	1	......	......	Fined $80; paid.
Trespass	1	1	......	......	Fined $5; paid.

WINONA COUNTY.

P. FITZPATRICK, *County Attorney.*

Number of persons prosecuted, 66.

Charged with.	Number.	Convictions.	Acquittals.	Nolle Pros.	Punishment.
Manslaughter in fourth degree	1	1	......	......	Under 7 years state prison; under influence of liquor.
Assault with intent to kill	3	2	......	1	2 Under 7 years state prison; 1 under influence of liquor.
Larceny	19	13	4	2	3 Under 7 years state prison; 7 county jail; 3 fined $170; fines paid $50; 4 under influence of liquor.
Forgery	3	3	......	......	Under 7 years state prison.
Assault and battery	30	26	2	2	26 Fined; total fines, $305; paid $295; 12 under influence of liquor.
Rape	2	......	2	......	1 guilty of assault and fined $30, paid; 1 under influence of liquor.
Malicious mischief	4	2	1	1	2 fined $20; paid $10.
Adultery	1	......	......	1	
Contempt of court	1	1	......	......	Fined $5.
Seduction	2	......	......	1	1 Pending.

WRIGHT COUNTY.

A. Y. EATON, *County Attorney.*

Number of persons prosecuted, 8.

Charged with.	Number.	Convictions.	Acquittals.	Nolle Pros.	Punishment.
Burglary	1	1	......	......	Under 7 years state prison.
Larceny	2	1	1	......	Not given.
Violation of liquor law	2	1	......	......	Fined $50, paid.
House breaking	2	1	1	......	Under 7 years state prison.
Obtaining goods under false pretenses	1	......	......	......	Not given.
Embezzlement	1	......	......	......	Not given.

YELLOW MEDICINE COUNTY.

C. E. SHANNON, *County Attorney.*

Number of persons prosecuted, 1.

For arson — Acquitted.

Report of the District Attorney of the Twelfth Judicial District, Minnesota, of Cases prosecuted by him in District Court, for said District, between Nov. 15, 1882, *and July* 1, 1884.

Counties.	Offense.	Number.	Convictions.	Acquittals.	Nolle Pros.	Remarks.
Big Stone	Larceny	1	......	......	1	
	Murder	1	1	......	......	State prison for life.
Chippewa	Assault and battery	1	1	......	......	Appeal — Fine.
Kandiyohi	Manslaughter	2	......	......	2	
	Larceny	3	3	......	......	2 County jail; 1 State prison, 1 year.
	Felonious assault	1	......	......	......	Examined and committed to St. Peter for present insanity.
	Malicious trespass	1	1	......	......	County jail.
	Fasle pretense	1	1	......	......	County jail.
Lac Qui Parle	Felonious assault	1	1	......	......	State prison, 3 years.
Stevens	Larceny	2	2	......	......	1 State prison, 1 year; 1 sentence suspended.
	Forgery	1	......	......	......	Escaped; bail forfeited.
	Rape	1	......	1	......	
Swift	Felonious assault	2	2	......	......	1 County jail; 1 sentence suspended.
	Robbery	1	1	......	......	State prison, 1 year.
	Larceny	2	2	......	......	State prison, 3 years.
	Bastardy	1	1	......	......	
Wilkin	Arson	1	1	......	......	State prison, 3 years.
	Malicious trespass	3	2	......	1	Fines.
	Bastardy	1	1	......	......	
	Violating liquor laws.	1	1	......	......	Fine.
Yellow Medicine	Arson	1	......	1	......	

Respectfully,

JNO. W. ARCTANDER, District Attorney.

TENTH REPORT

OF THE

STATE BOARD OF HEALTH

OF

MINNESOTA.

FOR THE PERIOD BETWEEN JANUARY 1, 1883, AND
AUGUST 1, 1884.

ST. PAUL, MINN.:
THE PIONEER PRESS COMPANY.
1884.

State Board of Health of Minnesota,
Office of the Secretary,
Red Wing, Minn., November 20, 1884.

To His Excellency, L. F. Hubbard, Governor of Minnesota,

Sir: I have the honor herewith to transmit the Tenth Report of the State Board of Health of Minnesota, for the period embraced within January 1, 1883, and August 1, 1884.

Very respectfully your obedient servant,
Charles N. Hewitt,
Secretary and Executive Officer.

MEMBERS
OF THE
STATE BOARD OF HEALTH.

NAMES AND RESIDENCES.

D. W. HAND, M. D., *President*	St. Paul.
CHARLES N. HEWITT, M. D., *Secretary*	Red Wing.
V. SMITH, M. D	Duluth.
FRANKLIN STAPLES, M. D	Winona.
E. J. DAVIS, M. D	Mankato.
CH. GRONVOLD, M. D	Norway.
W. H. LEONARD, M. D	Minneapolis.

All official correspondence should be addressed to the Secretary, the executive officer of the board.

NOTE — Correspondents are requested to use letter paper and to write upon but one side of the sheet. Much unnecessary labor is imposed upon the Secretary by the neglect of this simple rule in the voluminous correspondence of his office.

REPORT.

The State Board of Health respectfully submits its Second Biennial Report, (the tenth since its organization,) and accompanying documents. We refer to the detailed statement of the secretary for the particulars of our official work.

That work has increased since the last report in amount, variety and importance. The duties of the board as defined by law are:

First—"To put themselves in communication with local boards of health, hospitals, asylums and public institutions throughout the State and to take cognizance of the interests of health and life among the citizens generally."

Second—"To make sanitary investigations and inquiries respecting the causes of disease, especially of epidemics; the source of mortality, and the effects of localities, employments, conditions and circumstances on the public health."

Third—"They shall devise some scheme whereby medical and vital statistics of sanitary value may be obtained."

Fourth—"They shall act as an advisory board to the State in all hygienic and medical matters, especially such as relate to the location, construction, sewerage and administration of prisons, hospitals, asylums and other public institutions."

Fifth—"They shall have charge of all matters pertaining to quarantine, and authority to enact and enforce such measures as may be necessary for the public health."

Sixth—"They are to make such suggestions to the legislature for legislative action as they may deem proper."

Seventh—"To make a report to the legislature at each session of their doings, investigations and discoveries."

Eighth—"To have a permanent secretary, elected from their own number, who shall perform and superintend the work prescribed in this act, and such other work as the board may require. He shall furnish to the legislature, when in session, such information cognate to this act as from time to time they may deem necessary."

This act was approved March 4, 1872, and the board was organized on the 26th of the same month. The only change in the act, since then, has been in the amount of the appropriation which the Legislature has twice increased as the necessity therefor became apparent. Experience in using this law demonstrated that the power of quarantine must be more clearly defined, and induced the legislature to consolidate most of the scattered sanitary laws into one consecutive and clearly defined act.

In chapter 132, Laws of 1883, it is therefore further provided:

"SECTION 1. Whenever any part of this State appears to be threatened with, or is affected by, any epidemic or infectious disease, the State Board of Health may make, and from time to time alter and revoke, regulations for all or any of the following, among other purposes:

1. For the speedy interment of the dead.
2. For house to house visitation.
3. For the provision of medical aid and accommodation for patients, physicians and nurses.
4. For the promotion of cleansing, ventilation and disinfection; and
5. Guarding against the spread of disease by quarantine or exclusion of any infected persons, and may by order declare all or any of the regulations so made to be in force within the whole or any part or parts of the district of any local board of health in this State, and to apply to any vessels on any waters of this State, or to any railway cars or trains, or public vehicles of any kind, for the period named in such order, and may by any subsequent order abridge or extend such period.

SEC. 3. The local board of health of any district or districts within which, or part of which regulations, so issued by the State Board of Health are declared to be in force, shall superintend and see to the execution thereof, and shall appoint and pay such medical or other officers or persons, and do and provide all such acts, matters and things as may be necessary for mitigating or preventing the spread of any such disease, or for superintending or aiding in the execution of or executing such regulations as the case may require; said local board may also from time to time direct any prosecution or legal proceedings for or in respect of the willful disregard or neglect of any such regulation, or any regulation duly made and established by said local board. Said local boards shall have power of entry on any premises, vessel or vehicle, for the purpose of executing, or superintending the execution, of any regulations so issued by said State Board of Health or said local board.

It is further provided in sec. 4, in addition to other duties, that local health officers are "to make once in each year, in the month of May, and oftener if necessary, a thorough sanitary inspection of said town, village, borough or city, and present a written report of such inspection at the next meeting of the board of health, and he shall forward a copy of said report as soon as rendered to the State Board of Health."

"SEC. 10. All local boards of health and health officers shall make such investigations and reports, and obey such directions as to infectious diseases, as shall be directed by the State Board of Health. And any member of any board of health, or health officer, who shall neglect to perform the duties required of him under the provisions of this act, or any other act relating to the duties of the boards of health or health officers of this State, or who shall neglect or refuse to obey any reasonable directions as to infectious diseases as shall be directed by the State Board of Health, shall be liable, upon conviction in any court having competent jurisdiction, to be fined in a sum not less than twenty-five ($25) dollars, or more than one hundred ($100) dollars and shall become disqualified from holding the office of a member of the board of health."

"SEC. 14. The State Board of Health may, by order, require any two (2) or more local boards to act together for the purposes of the provisions of this act, for the prevention of epidemic diseases."

"SEC. 15. When any person coming from abroad, or residing in any town, village, borough or city within this State, is infected, or lately has been infected, with the small pox or other contagious disease, dangerous to the public health, the board of health of the town, village, borough or city where such sick or infected person is, may immediately cause such person to be removed to a separate house, if it can be done without danger to his health, and shall provide for such person or persons, nurses, medical attendance and other necessaries, which shall be a charge in favor of such town, village, borough or city upon the person so provided for, his parents, guardian or master, if able; otherwise upon the county in which he has a legal settlement, or upon the State, if said person be a non-resident of the State, and has no property within the State; in which latter case the bills for such expenses shall be paid only after being audited and approved by the State Board of Health and by the governor, and said bill shall be allowed only on condition that the local board of health shall have promptly, on the appearance of such disease, notified the State Board of Health thereof, and shall have followed the instructions and regulations of said State Board given with respect to the care and expense in the case or cases in reference to which said bills were incurred, and further shall file satisfactory evidence to said State Board that such person or persons were non-residents of the State and have no property within the same. The town, village, borough or city, as the case may be, may recover in a civil action against the person or persons or the county chargeable under this section."

"SEC. 18. [It] shall be the duty of all local boards of health, whenever they are informed that there is a case of small pox, scarlet fever, diphtheria or other infectious or contagious disease within the territory over which it has jurisdiction, to immediately examine into the facts of the case, and if the disease appears to be of the character above specified, they shall adopt such quarantine and sanitary measures as may in their judgment tend to prevent the spread of said disease in its locality, subject to be modified by the State Board of Health, and shall immediately notify the secretary of said State Board, of the appearance of such disease and the measures adopted by said local board in relation thereto."

"SEC. 24. That no person shall, within the limits of any town, city or village within this State, without a permit from the local or State Board of Health, carry or remove from one (1) building to another, or from a vessel to the shore, or any railway cars, any person sick of any contagious disease, or the body of any person having died of contagious disease."

In the constituting act the following are the provisions as to the compensation of members and of the secretary:

Ninth—"No member except the secretary shall receive any compensation, but the actual expenses of any and all the members while engaged in the duties of the board shall be allowed and paid to the extent authorized by this act."

Tenth—"The secretary receives from the treasury, in quarterly payments, an annual salary of one thousand dollars, and his necesary and actual traveling expenses incurred in the performance of official duties, after they have been audited by the board and approved by the overnor. All other necessary expenses arising in his office shall be paid out of the treasury in the same manner as those of the different departments of State government."

"Provided, that the expenses of said board shall not exceed the sum of twenty-five hundred dollars per annum."

CO-OPERATION WITH LOCAL BOARDS OF HEALTH.

We are able to report more active local boards of health in the State than at any other time, and their increase in number is due largely to the popular appreciation of their necessity. We are stimulating local authorities in many ways, but in none so efficiently as by the hearty and active co-operation and aid which our secretary constantly gives to them in organization and methods of work. The correspondence of our office is chiefly in this direction, and our publications have this end in view. For years we have availed ourselves of every practicable means for popular education, and have permitted no opportunity to pass for work to that end. The effect is very apparent in the direction of local sanitary work as compared with previous years. The movement has really but just begun, and it would greatly facilitate our work, particularly as respects the control of epidemics, if local health boards *constantly* active could be made the rule, instead of (as now) the exception, in all but the larger towns of the State.

We need active local health officers, who are medical men, and who are paid enough for the work to encourage them to learn how to do it and to do it well.

Such officers are more necessary than the boards to which they are attached. But for them, local sanitary work in the direct control of disease would come to a stand still. Their work is difficult, delicate and important if thoroughly done, and is not to be well done till experience and study have educated them up to it.

There is now no inducement for medical men to prepare themselves for this duty. There are several in the State whom accident has compelled to know something of the control of infectious disease. Few who are competent to undertake the regular duty of guardianship of the health of a community, in the oversight of water supply; disposal of sewage and garbage; regulation of harmful trades; supervision of food supply, and control of preventable disease, in the various ways which modern science have afforded for the public administration of hygiene, can now be persuaded to do it, outside the great cities. We are frequently appealed to for the selection of health officers, because of this difficulty.

The functions of the health officer are already recognized and defined in the Health Law.

This board have secured a special examination, for such as choose to take it, by the medical faculty of the University, which, if successfully passed, entitles the candidate to the degree of "Licentiate in Sanitary Science."

We have a valuable and increasing library, gotten together with especial reference to the needs of health officers, and a working laboratory, where practical instruction will be given to any who wish it, in the analysis of water and adulterations of food. We can do no more at present..

So the inducement to preparation for the successful work of a local health officer rests upon the legal provision for the proper compensation for the work, and a sufficient tenure of office to make it desirable to competent medical men. This is the duty of the legislature.

After careful study of the matter in the light of our experience, we suggest such legislation as shall make the appointment obligatory in all our towns of over 1,000 inhabitants; that the tenure of office be at least two years; that the compensation be sufficient to induce competent men to accept; that the qualifications be recognized professional ability; previous service as health officer; and that the preference be given to such as obtain the "license" of the College of Medicine of the University. No more important advance in preparation for practical local sanitation can be done than this, none is more necessary, and in no other State have equal facilities for the education of health officers been provided.

SANITARY INVESTIGATIONS.

For details we refer to the secretary's report, in whose office and by whose direction this work has been done.

The laboratory work has been chiefly water analysis, the examination of suspected foods, and a new investigation of some points in the chemistry and use of kerosene.

The laboratory is so ordered as a part of our office work that its expense is small.

The water analysis has been chiefly of samples furnished by health officers or physicians, and suspected of organic impurity.

THE QUARANTINE AND CONTROL OF INFECTIOUS DISEASES.

A reference to the secretary's report and the papers of the appendix will show how valuable this work has been. Twice in the period embraced in this report we have been enabled to control outbreaks of small pox, beyond the power of the local authorities; and in every other outbreak we have been able to afford to the local boards of health such aid as to materially lighten and facilitate their work.

As to *Diphtheria,* we have, with the aid of a few earnest health officers and physicians, succeeded, after years of effort, in making quarantine and disinfection trusted methods for its control.

The reports for these, as for the previous two years, indicate a decided progress toward the better control of this dreaded pest.

Temporary hospitals and competent nurses are more and more necessary in dealing with infectious diseases. In our last report we urged that the city hospitals might do much to educate this class of nurses. The wages are large, the demand constant, and the work opens a field for a few thoroughly competent men and women, which ought to be filled.

Our secretary's suggestion of *wall hospital tents for temporary hospitals,* arranged as he proposes, offers one practical plan, than which none better has yet been proposed. The easy and certain disinfection of tents is a strong argument in their favor.

CHOLERA.

We call attention to the secretary's discussion of the probabilities of the occurrence of this disease and of the best methods of control.

He states the unanimous opinion of the board.

We are fully forewarned, let us be fore-armed. *The strongest inducement our people can hold out to cholera, as to all other preventable diseases, is the average insanitary conditions of our houses and towns, as respects the disposal of excreta and garbage.*

The privy, the usual cesspool, and the neglected garbage heap, must be promptly replaced by better methods of disposal, even where there is no public sewer system or water supply, as is the rule in this State. This may be done easily and at moderate expense in various ways. Among them the following is practicable both by householders and, as is far better, by local authorities:

First—Some one of the many forms of earth closet, the contents of which, with manure, should be regularly removed to farming lands.

Second—The house slops may be easily gotten rid of by shallow drains under garden and lawn, from a tight reservoir, which collecting the heavy matters must be emptied, and contents removed with the manure. Or, as some prefer, all slops may be removed in close barrels on to farming lands.

Third—Garbage, street and alley sweepings must as regularly be removed on to farming lands, and buried in trenches. This work, if left to householders, will never be done efficiently in any place.

It must be made a part of the duty of the local board of health, and paid for by the village or town. There is no other practicable way, and the expense under the vigilant direction of a competent health officer, would for a year cost less than one considerable epidemic of small pox, diphtheria, typhoid fever, or cholera. There is no question that the solution of this problem of filth disposal presses more heavily in anticipation of the possible events of next year, and that it must be met.

Further legislation, State and municipal, is necessary, but it should begin with making the health office a desirable one for competent medical men, and by protecting it by all the safeguards which have been suggested above.

That done, and a competent physician elected, this further should be ordered, *a regular monthly inspection and report.*

At present the law requires but one sanitary inspection a year in May. That inspection should be monthly from April to November, and during winter need be made only when increased sickness, death or infectious diseases particularly require, as is now specified in the law (sections 4, 6, 8, 10 and 18, chap. 132, Laws 1883).

After each inspection should follow a meeting of the local board and such action as the inspection shows to be necessary, exactly as now required (sec. 4) in the Health Law of 1883, and that a copy of the report, and notice of the action thereon, be forwarded immediately to this board.

In the event of cholera, those sections requiring notice of sickness or of death are of the most vital importance. It is believed to be the requirement next in importance to public cleanliness.

If there is any defect in the wording, or doubt as to the meaning, of these sections, they should be changed and all doubt of the duty, or, of the penalty for disobedience, removed.

We repeat, with deliberate emphasis, that the beginning of preparation for any epidemic is to be found in *efficient* and *constant* local health organization of which the essential element is a competent physician as health officer. His compensation should be sufficient, but must vary with the amount of duty required.

2. Such legislation, State and local, as will make systematic inspection regular and thorough, and the removal of nuisances and causes of disease just as prompt and thorough, on the order of the local board of health.

To this end the scavenger service should be under the direction of the health officer.

3. Notification of sickness and disease to the health officer, compulsory on householders and physicians, is now provided for.

4. The collection of vital statistics to be made the duty of the health officer. As now collected, they are practically worthless, but in the hands of the health officer they become facts of value in his work and ours.

In other respects the existing law is fairly sufficient.

As respects the work of the State Board of Health in the event of cholera, we submit:

1. That a sufficient contingent fund should be placed at the disposal of the governor, for use in the event of epidemics in the State, beyond the power of localities to control, or in the control of which this board should act as provided by law.

In the work of preparation, which must be done whether the disease comes or not, some but not much expense will be involved. It is a very essential preparation, however, because upon its completeness will rest our ability to act promptly.

This preparation will consist chiefly:

1. In enforcing the laws as to local sanitary activity, through local boards of health and health officers.

2. To make a sanitary survey of the whole State, in co-operation with local authorities.

a. To take such steps as are necessary to remedy sanitary defects so discovered.

b. To keep thoroughly informed through local reports or our own investigations as to the work so done.

3. To use every means for professional and popular enlightenment.

To this end the Secretary has been instructed to call a conference of local boards of health with this board, at the Capitol, in January, 1885, for the mutual discussion of sanitary conditions and plans.

In addition the evenings of the days of the session will be devoted to a popular sanitary council such as was so successful in 1881.

This much for preparation for epidemics of any kind, including cholera. The pecuniary cost will not be large, and should come from the "epidemic fund" above asked for.

Should cholera come, the demand upon the special fund will of course be proportioned to the extent of the outbreak and the steps found necessary for its control. The legislature must determine, and specify in the bill appropriating funds for the contingency, its will as to the duty of this board in the matter of advising payment of local expenses, and lay down the general principles upon which we should act where specific directions are impossible.

It also follows that the earlier in the session legislation is taken in these matters the more complete will be the preparation of the State and local boards for the possibilities of next year, and the more time they can have the better can they avoid all undue haste and organize their preparations deliberately and carefully.

To this end money and legislation are not alone sufficient. There must be popular appreciation, not only of danger, but of the real character of the danger and of the character and necessity of the measures of precaution and safety.

One of the greatest of dangers and difficulties in the presence of any great epidemic is panic, and hasty or senseless and useless local action.

This danger was a very real one, in the yellow fever outbreak of the South last year and three years ago.

As one means of avoiding these dangers the conference and council already referred to will serve a good purpose, and the newspapers of the State can aid very much if they will avoid the publication of anything false or sensational.

In the event of the advent of cholera into the country or the State this board will furnish the State Press with the exact facts, as we will to every local board of health in the State, of whom they can, therefore, usually be obtained.

Pollution of lakes and streams used for public water supply. The number of towns constructing water works and drawing their supply from adjacent streams has been greater in the last two years than ever before in the history of the State.

With the increase of population has been an increase in the number and diversity of manufactories using chemicals and disposing of their fluid and solid refuse into water courses, as also the amount of garbage, sewage and night soil dumped into the same streams by local authorities.

This board submitted a bill to the last legislature which was passed by the House toward the close of the session but was not reached by the Senate.

It was based upon the Massachusetts experience, and upon the law the result of that experience which is now in successful use in that State.

We beg to submit that bill again for adoption, as a fair and practical method of dealing with the pollution of water courses and as particularly necessary at this time.

Now, there is no such pollution which may not be easily dealt with in the interest of public health and without injury to vested interests; but it cannot be long before large amounts of capital will be invested in the class of manufactories alluded to and their methods of work be so firmly established that neccssary change will involve great temporary pecuniary loss, and so create an opposition to change, which, as in Massachusetts, may involve long litigation and public expense.

The question of preventing the pollution of public water supply is too important to admit of any further delay in dealing with it, and we earnestly ask the legislature to give it such consideration and action as its importance demands.

We respectfully refer for further details of our work to the report of the secretary of this board and the attached papers.

The financial exhibit attached details our expenditures.

In reference to the ordinary work of the coming two years, we respectfully submit the following resolution passed at the last meeting of the board at the Capitol, after consultation with the governor:

Resolved, That we respectfully ask the governor to recommend an appropriation of $5,000 per year for the State Board of Health; twenty-five hundred dollars of that amount being for salary of the secretary, and six hundred dollars salary of a competent clerk for the secretary's office.

Passed Nov. 17, 1884.

W. H. LEONARD, M. D.,
Secretary *pro tem.*

All of which is respectfully submitted.

D. W. HAND,
V. SMITH,
FRANKLIN STAPLES,
E. J. DAVIS,
CH. GRONVOLD,
W. H. LEONARD,
C. N. HEWITT.

FINANCIAL EXHIBIT FROM JANUARY 1, 1883, TO AUGUST 1, 1884.

RECEIPTS.

	PERIOD.		TOTAL.
	Jan. 1, 1883 to Aug. 1, 1883.	Aug. 1, 1883 to Aug. 1, 1884.	Jan. 1, 1883 to Aug. 1, 1884.
Receipts from Treasurer	$976 04	$2,128 35	....
Credit to overcharge account, April 10, 1883	10 00	....	....
	$986 04	$2,128 35	$3,114 39

EXPENDITURES.

Books for Library	$88 12	$48 33	136 45
Vaccine	4 00	....	4 00
Postage	22 10	55 00	77 10
Stationery	1 85	7 35	9 29
Telegraphing	42 47	17 13	59 60
Printing	45 25	166 15	211 40
Freight and Express	8 75	22 00	30 75
Expenses of Smallpox Inspection	42 00	15 00	57 00
Laboratory and Office Assistance	185 00	365 02	550 02
Book-binding	16 50	41 50	58 00
Traveling Expenses of Members of Board	26 75	201 36	228 11
Chemicals, Gas, etc., for Laboratory	3 25	45 95	49 20
Journals and Periodicals for Library	....	77 06	77 06
Stenographic Report of Sanitary Meeting	....	18 75	18 75
Glanders' Inspection	....	47 75	47 75
Secretary's Salary	500 00	1,000 00	1,500 00
Total Expenditure	$986 04	$2,128 35	$3,114 39

SECRETARY'S REPORT.

To the State Board of Health of Minnesota:

I beg to submit the following report of my official action, and of the work done in the office and laboratory of the board, for the period beginning January 1, 1883, and ending July 31, 1884.

EPIDEMICS.

During this time there have been reported to the office of this board, of—

SMALL POX.

Distinct and separate outbreaks	17
Towns and townships infected	23
Camps known to have been infected	8
Total number of cases	260
Deaths	78
Of the sick — Whites	225
— Indians	35
Of the dead — Whites	43
— Indians	35
Of the sick reported as belonging to families were	153
Number of families infected	54
Total deaths in families	28
Per cent of dead to total sick	18.3

At the date of the last report, December 31, 1882, several outbreaks of small pox had occurred in Minneapolis. The patients were sent to a small-pox hospital, and on January 14, 1883, Dr. E. J. Brown, appointed quarantine physician, found eight persons convalescent there. A few cases under quarantine remained in Isanti County, where was no further outbreak and the disease had just been reported in camps on the Upper Mississippi, December 22, 1882.

In Minneapolis, up to May 20, 1883, so far as known to the health officer, forty new cases were treated at home or in hospital, or were discovered in infected families (after their recovery) upon the outbreak of well marked cases exposed to them.

An analysis of Dr. Brown's reports, shows that there were fifteen distinct outbreaks, *i. e.*, so many series of one or more cases for which no common origin could be found. The first group of four cases originated by exposure of first case while at work upon quarantine hospital.

Of the other groups, eight could not be traced to their origin.

Two outbreaks, including three cases, came from Cook's camps on Split Hand River.

One outbreak, a single case, came from Trout Lake ranch; another outbreak, a single case, had been "toting" above Aitkin. Hence it appears that but five cases came from the infected lumber camps to Minneapolis, none of whom communicated the disease to others. It is possible that another outbreak of three cases may have been occasioned by exposure to a man from a non-infected camp (McAllister's), but it is not proven.

The original case of the lumber camps outbreak came directly from Minneapolis.

A lady exposed to the family classed under outbreak two of our summary (Rice), went to Iowa and there occasioned an outbreak of thirteen cases and three deaths. (See Appendix.)

Outbreak number twelve, "Kramer's American House," infected one case, F. W., who died at Chanhassen, Carver County after infecting a brother.

Another person, exposed at "Kramers," took sick and died at Maple Plain, infecting two others. It is impossible to trace the origin, or the almost endemic prevalence of small pox in Minneapolis for so many months, except to mild cases of varioloid not reported to the health officer, but I refer you to Dr. Brown's report, which exhibits an ignorance or carelessness in diagnosis and care of the disease upon the part of men calling themselves physicians, which is little less than criminal.

The health officer's report for last year gives many similar facts. These reports indicate some of the difficulties health officers meet in the control of infectious disease.

Small pox disappeared about the first of July, 1883, and has not recurred since, either in Minneapolis or the State.

The outbreak in the lumber camps began in the person of a man named John Carney, who was taken sick at a stopping place called Trout Lake ranch about twenty-five miles above Grand

Rapids, in the unorganized county of Itasca. He was en route to Caldwell's camp on the Big Forks, sixty miles from Grand Rapids. Feeling unwell he started on his return, December 9 or 10, 1882, stopping at Bagley's camp, twelve or fifteen miles above Grand Rapids. Soon after his arrival an eruption was noticed on his face supposed by the men to be measles; he was sent to Grand Rapids, where Dr. E. H. Belyea recognized the disease to be confluent small pox, and quarantined him (with a nurse who had had the disease) in an isolated building, notifying the leading lumbermen of the facts, and of the precautions necessary to be taken.

Dr. Belyea reported to secretary by mail, under date December 18, 1882, and asked for instructions. I received his letter on the 22d; sent him a quantity of circulars upon small pox with further instructions and 30 points of animal virus. These were forwarded by mail in care of postmaster at Aitkin. He was requested to inform the local board of health of Aitkin of the facts, and to ask them to forward Dr. Belyea's mail by special messenger, as of as much importance to them as to Grand Rapids. Dr. Belyea received his mail six days after it was sent, December 28.

In the same letter, he was instructed to trace the origin of the case, by going to the camp whence it was brought, and to take such further steps as what he there found might require.

Under date December 22, I asked the local board of health of Minneapolis to meet me at their office on the 23d, when we took such precautions as seemed necessary.

December 30, Dr. Belyea went to Bagley's camp to vaccinate, and from there was called to Doyle's ranch, ten miles above Grand Rapids, to see a man named Porter, who proved to be the second case.

The lumbermen insisted upon calling this as the former case, measles, and were very loath to admit that it might be small pox for fear of a panic among the men.

Dr. Belyea was then as before "threatened, and urged to treat it as small pox if necessary, but call it by some other name."

For some days he had great difficulty in securing quarantine. He isolated the case in a separate building of the ranch. The patient died and was buried there Jan. 13, 1883. The bedding and clothing was burned and the room disinfected by the Doctor himself, the other inhabitants having been vaccinated.

The third, fourth and fifth cases occurred at this ranch, infected by the second case.

Jan. 3d a message from Caldwell's Camp came to Grand Rapids with information that small pox had appeared there in men exposed to the first case at Trout Lake Ranch, and asking for a physician. Dr. Belyea could not be spared and he sent an Indian with a despatch to the secretary of this board. The message was not forwarded from Aitkin but was sent to Dr. Van Cleve, of Duluth, who passed Gand Rapids Jan. 9th on his way to Caldwell's.

Jan. 23d Dr. Belyea reports: "Dr. Van Cleve has returned and reports fifteen sick and two deaths from small pox among whites and Indians at Caldwell's, the sick quarantined and cared for as well as possible.

"Infected men are escaping from the camp and going down river. They must be stopped at Aitkin."

Jan. 26th. Notice received by the secretary of the organization of the local board at Aitkin on the 24th.

Secretary telegraphed to Aitkin to appoint a health officer. Wrote full instructions to the local board and requested Dr. V. Smith, of Duluth, a member of this board, to visit Aitkin and assist the health officer and local board.

Same date, with a view to enlist the aid of the great lumber firms in the control of the panic which had now begun, the secretary wrote to J. B. Bassett, of Minneapolis, stating what steps had been taken, and that the greatest difficulty would be the quarantine of suspected cases.

Jan. 27th the secretary went to Aitkin via Brainerd, and met the local board and Dr. Van Cleve, the health officer. While conferring at the depot with the board the first case of small pox to arrive at Aitkin came in to buy a ticket for Dakota. The disease was recognized, and he was immediately sent to the pest house, a well-situated building that the board had just secured for the purpose.

The secretary could obtain no definite account of the extent of the infection among the camps. He had first proposed to go himself, but found that the time necessary for the trip was more than he could spare from the more necessary work of arranging plans for protecting the State at large.

Fortunately he was able to persuade Dr. J. C. Rosser, of Brainerd, well known to lumbermen and Indians, trusted alike by both, and familiar with the country and the ways of camp life, to act as the chief of the sanitary service to be organized at and above Grand Rapids.

With him were associated Dr. C. Q. Scoboria, of Elk River, who had served with the secretary in the outbreak of small pox in Stearns County two years before.

Dr. Belyea was instructed to co-operate under Dr. Rosser's direction.

Because of the absence of county or town organizations in the infected district, the Governor had instructed the secretary of the State board to organize such police force as should be found necessary. Dr. Rosser was entrusted with this power, and was efficiently aided by the sheriffs of Crow Wing and Aitkin counties.

The reports of Drs. Rosser, Belyea and Scoboria give very full details of the outbreak and of the work which they performed, and I respectfully refer to them. They deserve great praise for work done under such difficulties as made the success, which they finally won, at times very doubtful. And now, after a thorough review of the work, that success was greater than at the time appeared. Despite the panic in the camps, but forty-six men were quarantined at Aitkin during the entire outbreak, of whom but five had the disease. These were cared for in the hospital there, and all recovered.

The quarantine station and hospital at Aitkin were in charge of Dr. Van Cleve, sustained by an energetic local board of health. The health officer was tireless and active. He gave unswerving support to the plans devised for the control both of the disease and of men suspected of infection. Not a case occurred in the population of Aitkin, thanks to thorough vaccination.

Eight infected men from the camps evaded our quarantine; of these, five reached Minneapolis; they were quarantined and cared for by the health officer, Dr. J. C. Cockburn, or his assistant, Dr. Brown, and did not give the disease to others.

One man escaped to Brainerd, and was cared for there, infecting no one.

Another reached Duluth and was quarantined; no other case.

Another went to Morris, Stevens County. The health officer caught him and no one else was infected there.

Dr. Brackett, of Minneapolis, was employed by Chase, Miller and De Laittre to vaccinate their men and care for their camps. Under date February 17, 1884, he wrote to the secretary some account of small pox in Cook's camp, and asked advice as to the disposal of men there when they came away, and subsequently gave notice of the escape of sick and well from the camps above, toward Aitkin.

It is proper to state on his that return from Aitkin, January 30, the secretary called a meeting of lumber firms in Minneapolis, and advised them, as a matter of safety for themselves and their men, to furnish vaccine to our officers, or to send physicians to their camps, and that they would save money by so doing. He also asked for contributions of hospital supplies, old linen, cotton, etc., for the hospitals at Aitkin and Grand Rapids. The same day called upon Mr. Haupt, Superintendent of the Northern Pacific Railroad, who promptly took the steps suggested for the protection of employes, and their co-operation in the common work.

He gave us many aids by telegraph and railroad facilities, which greatly furthered our efforts.

Taking into account the character, number and distribution of the camps and men exposed in this outbreak, the delay in admitting the existence of the disease, and in co-operating with the medical men in charge, the extent of the district and the lack of local organizations, there is every reason to be thankful for the result.

There were sick in the lumber camps, or in hospital at Aitkin, Grand Rapids, Duluth and Brainerd	58
Of whom 17 died — 30 per cent of sick.	
There were quarantined at Aitkin, including hospital	46
There were quarantined at Grand Rapids, so far as reported, including hospital	23

The details of subsequent outbreaks will be found in the small pox report. I give here the totals, from January 1, 1883, to August 1, 1884:

In Minneapolis — 15 distinct outbreaks.	
Total number cases (known to health officer)	40
Number of families infected	15
Number of hotels infected	2
Number of offices infected	2
Number of deaths	9
Outside of Minneapolis — lumber camp outbreak.	
Number of cases	58
Number of deaths	17
St. Michael's outbreak — (Wright and Hennepin counties, five centres in five townships.	
Number of cases	76
Number of families infected	23
Number of deaths	8

These include all the outbreaks in which occurred more than fifteen cases of the disease.

Summarizing the whole matter, there were:

Distinct outbreaks, including Indians	43
Number of counties infected	16
Number of towns and townships infected (including eight camps)	31
Total number of cases (Whites, 225; Indians, 35)	260
Total number of families infected (excluding the camps and Indians)	58
Total number of deaths (Whites, 43; Indians, 35)	78
Of the outbreaks of known origin	25
Of the outbreaks of unknown origin	14
Of the known origin from without the State	6

As follows: From ship-board	2
From Manitoba	1
From Pennsylvania	1
From Wisconsin	1
From Dakota	1

Within the State — From Minneapolis, the lumber camp outbreak (58 cases and 17 deaths)	1
Minneapolis city outbreaks (infected from hospital, 11 cases)	3
The Carver County outbreak (2 cases, 1 death)	1
The Maple Plain outbreak (3 cases, 1 death)	1
And not included in our summary, an outbreak in Iowa (13 cases, 3 deaths)	1
Total	7

From Frankfort, Wright County—

The Otsego outbreak	(8 cases and 0 death)	1
The Hassan outbreak	(1 case and 1 death)	1
The Elk River outbreak	(1 case and 1 death)	1
The Greenwood outbreak	(1 case and 0 death)	1
The Corcoran outbreak	(1 case and 0 death)	1
	17 cases and 2 deaths.	5

Calling the outbreaks in lumber camps (originating from the first case at ranch on Trout Lake) one outbreak, from that source came —

In Minneapolis, outbreaks	(5 cases and 2 deaths)	5
In Brainerd, outbreaks	(1 case and 1 death)	1
In Duluth, outbreaks	(1 case and 0 deaths)	1
In Morris, outbreaks	(1 case and 0 deaths)	1
Total	(8 cases and 3 deaths)	8

The last outbreak of small pox was in November, 1883.

Up to the date of this report (Aug. 1, 1884) the disease has not recurred anywhere in the State. It will probably appear again before winter, as it already exists in adjoining States. A constant watch is maintained, and we are better prepared than ever before to meet it when it comes.

As to the Indian outbreaks there were two. The first in their camp, near Caldwell's camp, with infection from Caldwell's men. Ten deaths occurred here. They moved camp towards Lake Winnibegoshish, and then began the second outbreak among them. Dr. Rosser, of Brainerd, went, by instruction of this board, to the lake, Feb. 27, 1883, to investigate, and his report is attached. There were here twenty-five cases and as many deaths. The Government physician, Dr. J. B. Walker, was in charge.

By direction of the Governor the secretary of this board wrote to the Indian Department, Washington, in behalf of the Indians. The reports and correspondence are herewith submitted.

While in all cases there has been constant co-operation, outside St. Paul and Minneapolis, the management of the outbreak of small pox has been chiefly under the direction of the State Board of Health. In many cases the health officers were selected by the secretary, and at every stage there has been hearty and mutual co-operation between those officers and this board.

The advantage has been marked in the limiting the outbreaks and caring for the sick. The experience so gained has resulted in many little changes in detail and greater efficiency. The vaccination reports detail the experience of health officers and demonstrate once more the advantage and necessity of its careful and thorough use, and almost more, that of *revaccination*.

There is proof of more than one kind of animal virus, and of the care necessary in its selection and use. Its operation has been at times so violent as to create a strong opposition. At other times it has been all that could be asked (see reports). Country local boards of health are slowly but wisely learning that small pox, even in a single family, is expensive to the taxpayers. The taxpayers are learning in their turn that the disease can be prevented by care and vaccination at comparatively trifling expense. The sanitary question has become a financial one, which is the surest way, perhaps, to the average intelligence, and the outcome will be to the advantage of public health.

The question of State pecuniary aid in the control of infectious diseases is constantly arising in the work of the State Board of

Health. The following is one of the strongest objections to the principle:

There can be no question that the assumption of such expense would involve the direct State control of the outbreak, and would remove one of the strongest inducements to local sanitary work, *the cost* of infectious disease.

Beside this, the State, through its board of health, does now constantly assist local authorities in many important ways, and the appendix to this report is so arranged as to exhibit not only local sanitary work, but the methods of the State Board of Health for prompt and constant aid, and their value as proven by results, not merely in small pox but in every department of sanitary effort. And further the law already provides for the care of alien sufferers from infectious diseases. Laws 1883, chapter 132, section 15.

DIPHTHERIA.

This disease, despite its great fatality, has but recently been recognized as not only infectious but as having a kind of infection which adheres to places and things with peculiar tenacity. This board has lost no opportunity to impress the fact upon physicians and people alike. A great change has been gradually wrought, and at this time the strict seclusion of the sick of this disease is the rule, popular, as well as professional.

Reports have been received in the office of the State Board of Health of thirty-two distinct outbreaks of diphtheria with four hundred and ninety-one deaths.

Twenty of these outbreaks of undoubted character have been confined to the family in which the first case occurred.

When the disease has spread beyond the first family infected, the reports show that quarantine was not established till after the disease had existed for some time, or, as in Minneapolis and St. Paul, it had a variety in origin.

When the outbreak was confined to one family we had the following statistics:

Average of cases to each family	5.	per cent.
Average of death to total sick	41.6	"

In Minneapolis and St. Paul the report of cases is compulsory.

From the reports of their health officers it appears that in Minneapolis for the year ending March 31, 1884, there were:

Cases reported	
Deaths	132

Percentage of deaths to cases	
Percentage of deaths to deaths from all causes	9.55
Of the dead —	
Males	70
Females	62
Ages —	
Under 1 year	2
1 to 5 years	60
5 to 10 "	47
10 to 20 "	20
20 to 40 "	2
40 to 60 "	1

ST. PAUL RECORD FOR YEAR ENDING MAY 31.

Cases reported	420
Total deaths	142
Percentage of deaths to total number of cases	33.8
Percentage of deaths from all causes	11.3

AGES OF NINETY-EIGHT FATAL CASES.

0 to 1 year	1	7 to 8 years	7
1 to 2 years	4	8 to 9 years	6
2 to 3 years	13	9 to 10 years	2
3 to 4 years	16	10 to 15 years	13
4 to 5 years	11	Above 15 years	5
5 to 6 years	14	1 to 5 years	34
6 to 7 years	6	5 to 10 years	44

DIPHTHERIA BY MONTHS—CASES AND DEATHS.

1883.	St. Paul.		Minneapolis.		Other Towns and Townships.	
	Cases.	Deaths	Cases.	Deaths	Cases.	Deaths
January	....	10	....	14	....	....
February	....	10	....	6	....	....
March	....	8	....	27	....	....
April	....	8	....	7	....	....
May	....	17	....	12	5	4
June	....	16	....	8	....	....
July	....	11	....	10	6	1
August	....	13	....	4	....	6
September	....	5	....	10	28 24	—* 6
October	....	11	....	13	13 22	—* 8
November	....	11	....	11	22	11
December	....	25	....	13	6	3
1884.						
January	....	15	....	10	26	13
February	....	6	....	7	25 15	—* 10
March	....	10	....	4	25	18
April	....	7	....	2	5	0
May	....	12	....	11	1	0
June	....	5	....	12	4	2
July	....	5	....	12	....	....

* Deaths of third series not reported.

Months of Greatest Mortality.—St. Paul, December; Minneapolis, March 1883; others, September.

Months of Least Mortality.—St. Paul, June and July, 1884; Minneaplis, August, 1883, March and April, 1884; others, May, 1884.

Average Deaths per Month.—St. Paul, 10.79; Minneapolis, 10.16; others, 5.5.

Despite the constant effort of the secretary, it has been very difficult to secure accurate detail of many important points with respect to this disease. But a reference to the subjoined reports will show that a greater number of outbreaks have been more regularly reported and in fuller detail than ever before. And what is of more consequence, quarantine has been oftener and more successfully used against this disease than ever before. There is also an increasing professional and popular conviction that, whatever one's opinion as to the degree or character of the infection, the only practicable method of prevention and control is the seclusion of patient, nurse and sick room from association with the well; and that in proportion to the completeness of this seclusion are the prospects of success in prevention or control of diphtheria.

A very sad feature of the country outbreaks is their terrible mortality, due to small, crowded and unhealthy houses, often of one and rarely of more than two or three small rooms, into which a large family is crowded, and where, as a rule, scarcely any one escapes. In many cases the parents have not sought for or have declined medical assistance; or if obtained it has been so late or of so irregular a character as to be little use. In such families, too, isolation of sick from well is impossible, and so is the prevention of the spread of the contagion through the family, and a great increase in the mortality. The quarantine of the family interrupting association with other families, while operating powerfully to prevent the spread of the disease, prevents too often, also, the rendering of neighborly service in nursing and other assistance. It works oftentimes great hardship, none the less severe because unavoidable, even more than in small pox. The competent and educated nurse is here a necessity, and how to supply the need is a problem as yet not satisfactorily solved.

Early in 1884, "cards for the report of individual cases of diphtheria," a copy of which is appended, based upon the plan of the British Medical Association, were issued from the office of the board, for use and distribution by local health officers throughout the State. It has been more difficult than at first thought to induce physicians to use them, but since June, 1884, there has been an increase of reports in this form, and it is expected that during the coming year the number using them will be largely increased.

Another feature, and an encouraging one, of the history of diphtheria since 1882, has been the report and quarantine of the disease by the chairmen of local boards of health where no physician has been a member. This fact is due to the increasing popular belief in its infectiousness, and the conviction that seclusion of the sick offers the only practicable means of control.

ETIOLOGY OF DIPHTHERIA.

A few facts bearing on this subject will be found in the reports.

Dr. Hoyt, health officer of St. Paul, reports as to the water supply and sewerage of premises occupied by 291 cases.

230 used wells and cesspools,
41 used waterworks and sewers,
20 used cistern, springs and surface drainage.

In memorandum from Dr. C. R. Witherle, St. Paul, of Feb. 21, 1884, it appears that of the homes of 98 fatal cases which have occurred in St. Paul since June, 1883, 92 had no connection with sewers. Of these 32 were in West St. Paul.

As to water supply:

27 used wells,
15 used cisterns,
14 used Lake Phalen (city supply),
10 not ascertained.

Dr. Collins, health officer of St. Peter, Nicollet County, gives the clearest account of the succession of the symptoms in a series of cases (see his report), and Dr. Beebe, of St. Cloud, the succession of symptoms in his own case (see his report).

PUBLIC FUNERALS.

In but two instances have public funerals of the victims of diphtheria been reported, a very encouraging fact, as the disease has more than once, in former years, been communicated in this way. Outside St. Paul and Minneapolis, the largest outbreak has been in Frankfort, Wright county.

Illustrations of the methods whereby diphtheria is carried, and of the mortality which it occasions among the young, will be found in

Dr. Schmidt's report, under Stearns County report; in Dr. Gilman's report for St. Cloud, same county.

In St. Cloud there was difficulty in the successful use of sulphurous acid as a disinfectant. The secretary called attention to the necessity for *personal* supervision. (See the St. Cloud report.)

Dr. Beebe, of St. Cloud, who caught the infection in his own person, has kindly answered the inquiries of the secretary in a letter attached to the St. Cloud report. See also Dr. Noyes, health officer of village of Monticello, Sherburne County, and the record of the Goodman family in Goodhue County.

TYPHOID FEVER.

Though causing the largest average mortality year by year of any preventable disease, is not yet quarantined in the great cities or in the State at large.

As is well known by medical men it is intimately related to insanitary conditions and ought to be recognized here as in England as a "filth disease." There is little doubt that it is transmitted from sick to well by the discharges from the bowels of the sick, and that if they were thoroughly disinfected before removal from the sick-room the spread of the disease would be materially checked.

The tract on typhoid fever of this board has been freely distributed throughout the State, and if physicians will unite with health officers in enforcing the simple rules there laid down, the sickness and mortality from this clearly preventable disease will be materially diminished.

TEMPORARY HOSPITALS.

The question recurring constantly as to the practicability of such constructions, your secretary proposed the use of wall or hospital tents with matched and oiled board floors to be heated by stoves in cool weather. Well made cotton duck tents, 12 x 9 feet with 6 feet walls, cost only $20 apiece. Put end to end, with well-made floor, two would give better quarters for six or eight children, sick with diphtheria, than the average of their own homes, and vastly better quarters for small pox. Iron beds at $4.50 a piece, with wire mattress, bed-side tables, $1 each, and wooden chairs well oiled, at $6 a dozen, make a capital hospital. A 9 x 9 wall tent for the cook completes the outfit at a cost of about one hundred dollars.

2 Cotton duck tents, 12 x 9 x 6	$40 00
6 Iron beds, wire mattress, $4.50	27 00
3 Tables, $1	3 00
1 Heating Stove, say	5 00
6 Chairs	3 00
Cook tent, 9 x 9 x 3	10 00
Cook stove	5 00
Total	$93 00

The bedding to come with the patients, as also the table and kitchen ware. After use, tents and beds are easily disinfected and stored for other use. A tent is the easiest of all living rooms to disinfect. Even in winter such tents as are above described, properly erected, floored and warmed, are as comfortable as well made houses, and in every way better adapted to the use of the sick of infectious disease. Another advantage is that the hospital might be erected near the infected house or group of houses, and moved as required.

DURATION OF QUARANTINE.

The question has constantly been asked, "How long to quarantine after recovery of last case?" And the experience of health officers corresponds with that of this board. Three weeks is the minimum after the last complete recovery, the health officer to be the judge, and to be influenced largely by the care and disinfection of persons and things during the sickness.

DISINFECTION OF PERSONS AND THINGS.

No change has been made in the rules for this purpose, other than to advise the use of steam with sulphurous acid gas, and the use of a dilute solution of bi-chloride of mercury (as suggested by Miquel in his reports from Montsouris, Paris) for the disinfecting fluid.

In most cases, however, the infected clothing, etc., has, after fumigation, been soaked in boiling soap suds or simple hot water.

It has been difficult to persuade many people *not* to rely upon *feeble* sulphurous or other odors for disinfection. The habit is of long standing.

NOTIFICATION OF THE SICK OF DIPHTHERIA TO THE HEALTH OFFICER.

Throughout the State this rule is better enforced than ever before, and with encouraging results.

The outbreak at Rochester, Olmsted county, in a populous hotel, with a public funeral, before the local board of health had notice of the disease, is an illustration of the neglect of the law, which it is a satisfaction to report to be of much less frequent occurrence this year than ever before.

In Minneapolis and St. Paul medical men are co-operating in this respect with the health officers more generally than heretofore, but not so fully as we have the right to expect and as public safety demands.

Reviewing the whole topic, I am justified in expressing confidence of encouraging results in all directions for the sanitary control of diphtheria for the coming year.

The tract on the subject has recently been revised and widely distributed through the State, as have the "cards for detailed reports of single cases of the disease."

An outbreak rarely occurs that notice is not immediately received at the office of the board that the precautions advised have been duly taken by the local board of health.

I cannot conclude the record of the work of my office as respects infectious disease without a hearty tribute of thanks to the local health officers who so faithfully performed their duty in the control of variola, very often under the most discouraging circumstances.

This tribute is particularly due to the gentlemen who served in the lumber camp outbreaks, of whom mention has already been made, and to Dr. Pinault, health officer of Frankfort, who distinguished himself by untiring perseverence, tact and skill in dealing not only with the epidemic but with a strong popular prejudice against vaccination.

Commendation is due to many of the country local boards of health, who, when made aware of their duty, have so cordially carried out the instructions of the State board and of their health officers. They, too, have had to contend against much popular misapprehension and prejudice, sometimes with no other professional sanitary assistance or advice than they received by correspondence from the office of this board. They are boards of town supervisors, and a very serious obstacle in their way is that sanitary work constitutes but a small part, an almost accidental part of their duty, and that confined almost entirely to dealing with infectious diseases. Until the members of these boards and the people who elect them can be educated to understand the real economy, *pecuniary* economy, if you please, of the prevention not only of infectious *but of all other preventable* disease by a vigilant and competent health officer, more legislation as to their duties than we now have, is unnecessary and undesirable. The country boards are not alone in their neglect to enforce the law as respects local sanitation. In very few, even of the larger towns of the State, is the local board of health much more than a form, except under the stimulus of an anticipated or present epidemic. The fault here, as there, is a lack of hearty effort by educated and influential people in the diffusion of the most elementary sanitary knowledge and in making it available for the public good.

It is this discouraging fact, quite as much as the absence of adequate pecuniary compensation, which makes it so difficult for the State Board of Health to induce competent medical men to serve as health officers when we are asked, as we frequently are, to select one. We understand fully that with a popular appreciation of their necessity and value will be the popular demand for local sanitary work. That demand is increasing and not infrequently it is evinced by the appeals received for better administration of local sanitary law, and the demand for the publications of this board, as also for other current publications, books and journals on the subject of hygiene.

SANITARY LEGISLATION.

The Health Code enacted in 1883, was a decided advance in sanitary legislation, and has done much to secure a better organization and more efficient work of local boards. Some changes in detail and additions will probably be necessary. The most important are such as will enforce *regular* sanitary inspection of towns by competent health officers, and the prompt and thorough performance of the work which such inspection proves to be necessary, chiefly the regular disposal of filth accumulations, excreta and garbage by less dangerous methods than the usual privies, cesspools and garbage heaps.

This involves the systematic removal of all such material, by scavangers working under the local health boards.

It is useless to expect that this work will be properly done by owners on the order of the local boards, and, besides, the method is very expensive, requiring more constant inspection and giving very unsatisfactory results.

Every town of over 1,000 inhabitants should employ one scavenger constantly, under the direction of the health officer. The town should furnish the apparatus; hire the team and the men, and provide the dumping ground both for garbage and night soil.

Further, so fast as privies and cesspools are cleansed they should be *made water tight* and correspond to the requirements of the health officer before again used. No other privy should be permitted than such an one, or the earth closet, of which there is a great variety in use, but which can be easily and cheaply made by any one, and with dry garden earth, all nuisance can be removed, and the work of cleansing be no more offensive than that of the stable.

I submit a sketch of a very simple contrivance of this sort, which I have in use on my own property.

The use of a similar plan would reduce the work of the scavenger, both in expense and offense, whatever the privy system is in use.

The time has surely come for some legislation as to this matter, but it must be specific both as to method and penalty. To deal successfully with typhoid fever and cholera, the one always with us and the other now threatening, the first step is legislation of the kind here referred to.

I shall be happy to furnish the details of such an act based upon the records of a very large experience at home and abroad, which your library affords.

CHOLERA.

Ever since this pest appeared in Egypt, last June, I have made a careful study of its progress and the work of foreign boards of health and health officers for its control.

It now exists in south and southwestern Europe, and before winter, is very likely to effect a lodgement in the western hemisphere, probably in the southern portion of the United States or in South America. That it will reach the United States this year or next, is the reasonable conclusion from the history of its behavior in the past.

How to prevent the *importation* of cholera and yellow fever, and their spread in the country, is a question of national importance.

From the fear of yellow fever came the organization of the National Board of Health at the request of the American Public Health Association. The mistake in that movement was two-fold.

1. The organization and membership of the National Board were not such as to put it in happy accord with the methods of American sanitary work or with the existing organizations. It started out with the assumption that elaborate rules and regulations were the first requisite, to be made by central authority and adopted by State and local boards. It ignored State boards by dealing directly with local boards.

Its working relation to both State or local boards of health was largely a pecuniary one. Having large funds at its disposal, it made the distribution of those funds contingent upon the reports of its own inspectors and the adoption by State or local boards of such rules and regulations for the control of infectious disease in their respective localities as the National Board of Health saw fit to provide. It soon encountered the constitutional difficulty that by no congressional legislation could it obtain the right to dictate, in the slightest particular, the sanitary work within the individual States. Without discussing its policy or methods further, it is sufficient to state the fact that the last Congress omitted to appropriate funds for its further work, and that the epidemic fund was put at the disposal of the Secretary of the Treasury, and by him intrusted to the Marine Hospital Service, which last year used this fund for the control of yellow fever in the Southern States and this year in the sanitary observation of cholera.

Of the value of the scientific investigations made by competent gentlemen employed and paid by the National Board of Health there is no question.

The necessity for the proper organization and work of a real National Board of Health is greater now than ever before, but, to avoid the manifest mistakes of the past, that organization must be in better accord with the relation of the national government to States and with the sanitary organizations which States have constituted for the administration of sanitary law within their borders.

The national health organization should rest upon the basis of the State health organizations, for the simple reason that without such foundation its ability for practical sanitary work is limited to the quarantine of the maritime border of the country outside the control of the States, except in the District of Columbia and possibly in the forts, military reservations, navy yards, and navy of the nation, except as State or local boards of health can be induced to execute its regulations by the payment with national funds of the whole or part of its expenses.

The membership of the national health organization should be made up, in great part at least, of representatives of State boards with whom is the power to do sanitary work in their respective States and maritime quarantine.

Such an organization is practicable and necessary, and if attempted with honest purpose and a full recognition of the rights of State boards and of their duty of mutual co-operation in sanitary work, can be accomplished by gradual growth. There are many difficulties in the way which can only be removed by patience, tact and experience. One of the greatest of these will be the distribution and use of national money. This obstacle might in part be removed if the executive committee in the attached plan for a national council of State boards was made the national board of health, consisting of the executive officers of State boards having power as representatives of their respective boards to determine and execute plans for national and interstate sanitary work.

But another difficulty here is the fact that not all of State boards of health have any executive power and even profess that they do not want it. However that may be and whatever the form of organization found to be best, it is true that a national board must depend for *practical* power within the country upon the organization and executive power of the respective State boards who sustain it. No amount of national money or national legislation can supply this want.

The above statement with respect to a national health organization is the expression of the view which the State Board of Health of Minnesota has always held, and which since 1879 her representatives in the American Public Health Association and elsewhere have constantly and earnestly advocated till it has gotten to be known as the "Minnesota plan." Its general features will ultimately be adopted.

But dismissing the national view of the question of cholera and other infectious diseases, we have to arrange for the constant protection of our State from the invasion of *one* or more of these diseases, small pox the coming fall and winter and cholera next year.

I respectfully propose as the first step in that preparation, a thorough sanitary survey of the State, by State and local boards of health co-operating to that end.

Second, compulsory local sanitation particularly as respects the protection of the water supply and the disposal of filth.

Third, to do this, an efficient and permanent organization of the local boards of health, the appointment of a competent physician as health officer, and the provision of funds for the performance of necessary sanitary work.

Fourth, regular reports to the State Board of Health of the work so done and, as respects disease, of the occurrence of any marked outbreak in any locality, this in accordance with existing law. To this end we are safe in assuming the hearty and constant co-operation of the best physicians in the State. The compulsory notification by physicians and householders of infectious disease to the health officer is already provided for by law.

Fifth, to promote the organization of voluntary sanitary associations wherever possible, to support and aid local authorities in this work. This plan was proposed in a sanitary council at St. Paul, 1881 (See eighth report of the board).

Sixth, as respects cholera, the careful survey of hospital and other facilities for the care of cholera cases should they occur. This board should know where a supply of tents suitable for hospital purposes could be obtained should they be needed.

Seventh, arrangements for the employment of sanitary inspectors for service on trains, boats or in infected localities.

Eighth, a system of co-operation and mutual information with sanitary authorities east of us for the purpose of obtaining the quickest information of the approach of infected emigrants. (This last has already been arranged.) The greatest danger within the State will be local, perhaps country outbreaks, existing for some time before discovery by the health authorities.

The English system of house-to-house inspection by health officers would be the best safeguard in this direction and can be greatly facilitated by the co-operation of physicians which we hope to secure.

The next danger will be local panic and the adoption of absurd and impracticable measures by local authorities. The law gives the State Board of Health the regulation of these methods so far as local boards are concerned, but the efforts of these authorities will be greatly aided by the widest possible diffusion of information as to the history, causes, prevention and control of cholera, before its advent. For this provision is now being made.

The State board must determine immediately its policy as to the use, character, and duration of quarantine; disinfection; home or hospital, care of sick; pecuniary or other aid to infected localities, and local boards of health must be equally prepared to perform their duty under whatever circumstances a necessity therefor may arise.

For all this there is need, first, of mutual conference and understanding between the State and local boards; second, the legislature ought to put into the hands of the governor a sufficient contingent fund for use in the event of epidemics, said fund to be used upon requisition of this board. It must determine in the bill appropriating the fund, so far as possible, the conditions under which the State is willing to contribute funds for local assistance. Third, to secure intelligent professional and popular co-operation in this work. I respectfully submit a plan for a conference of local boards of health with this board, said boards to be represented by their health officers and such other members as they choose to send; that said conference hold four meetings upon two days, and that the evenings of those days be devoted to a popular sanitary council where health officers and representative men and women may be brought together for discussion of sanitary questions. Such a conference and council should be called to meet in St. Paul in January.

INFECTIOUS DISEASES OF CATTLE.

Glanders is prevailing in many localities of the State.

With the approval of the board the secretary has employed a veterinary surgeon two or three times to visit suspected localities.

The duty of dealing with animals suffering from infectious diseases communicable to man belongs to the local boards of health.

This board has published a circular summarizing the facts as to the disease, its recognition and prevention. We have also printed the proper blanks for use by local boards in ordering quarantine and destruction of animals, and a form of certificate for a veterinary surgeon. Upon the back of these blanks are printed explicit directions for the execution of the law.

The first difficulty which local boards have met in attempting to deal with glanders, is the unorganized condition of veterinary surgery in the State. The majority of those calling themselves veterinary surgeons have had no systematic professional education. A few are graduates of eastern veterinary colleges.

In the attempts which have been made by the local boards to deal with specific cases, there has been conflict of veterinary testimony, making legal measures difficult and uncertain.

The State Board of Health having by law the general supervision and management of infectious diseases of domestic animals as of man, is arranging plans for co-operation with stock breeders and others interested with a view of asking such legislation as shall enable the local boards to act promptly and efficiently in the management of such diseases.

LEPROSY.

Last year a sensational newspaper article occasioned much uneasiness in the popular mind as to the contagiousness of this disease, of which a few cases were known to be in Minnesota, Wisconsin and Iowa, and the impression was made that a great and hidden danger had been permitted to exist among our Norwegian population unchecked and disregarded.

The facts are, that in 1872, this board began a careful investigation of the subject; that Dr. Gronvold, our committee on leprosy, exhibited a case to the State Medical Society in St. Paul, in 1871; that in our first report the disease was described and discussed. Since 1873, as chairman of a committee of this board, Dr. Gronvold has maintained a constant watch of old, and outlook for new cases. He again discussed it in the Sixth Annual Report. His last report was nearly ready when this excitement occurred, and at my request he permitted its publication in the leading medical journals of the country, early in 1884. Revised by him to date, it is herewith presented, and is a model of plain, concise and consecutive presentation of facts, proving that every case, known (after long and careful search) is an imported one (six in all); that descendants of these cases to the fourth generation living here, have not shown a sympton of the disease, and that very few affected are now coming to this country. The study will be continued systematically as heretofore in all its relations to health of the victim, his family and others, but at present it may be safely stated that no danger is to be feared from leprosy.

KEROSENE INVESTIGATIONS.

Increasing complaints to the Governor as to the character of kerosene oils furnished for consumption in the State induced him to order me to make special investigation. The Governor, State oil inspector, agent and chemist of the Cleveland works of the

Standard Oil Company, met in my office early in the season. As a result of the conference I visited the Cleveland works and was courteously shown the methods in use for testing oils. While in New York I had the pleasure of meeting Profs. Chandler and Love, both proficient in kerosene analysis.

Returning home, engaged N. M. Baker, B.S., a careful and competent assistant. Together we planned a limited investigation of the complaints against kerosene supply, which may be classified:

1st. It becomes solid, or nearly so, in barrels, tanks and even lamps, in cold weather.

2d. It will not give a satisfactory light with ordinary wicks or lamps.

3d. There is a great variation in the quality furnished by dealers under the same brand and a great variation in price.

I had tested but one sample (the only one sent to me by the Governor) and had extracted from it by cold and ether solid paraffine, and what seemed a tarry product.

I respectfully refer to the report of our work, which, prosecuted in July and August, was only carried far enough to answer certain questions which the Governor had proposed to me. I am decidedly of the opinion that steps should be taken:

1st. To regulate the amount of white paraffine in kerosene, and the limit should be 20° F. The test by freezing mixture is easy.

2d. That the chief obstacle to free and odorless combustion of our average kerosene in common lamps and ordinary wick is the presence of heavy paraffine oils. Am not prepared to say it is *all* the difficulty, but so far as our experience went it is the chief.

These oils are not removable by freezing from an artificial solution in eocene, and I know of no other method except to distill off the lighter oils, which can only be done at the manufactory. There seems as yet no way of their detection except specific gravity,—too delicate, perhaps, for the average inspector.

From the consumers' standpoint these rules will secure good kerosene. Insist upon oil bright and clear, which will give no deposit at freezing and will not flash under 120° F. Such an oil is the brand "Eocene" at present.

Then use *shallow* lamps, not over two and one-half inches deep; use the best wicks. Always burn at full flame, never with a low flame; any oil will give offensive odors then. Keep the burners clean and free from sediment or gummy deposits. Our experiments show (as has been done repeatedly before), that a *low and imperfect flame heats the lamp and its contents to a dangerous degree,* even with a good oil. One poor oil burning in this way raised the temperature of the brass ferrule of the lamp to 190° F. Sometimes a lower temperature generated gas, which exploded in little puffs alongside the wick.

Even with a good kerosene an imperfect flame raised the temperature of the top of the lamp to 130° F., and even higher, in our experiments, sufficient, if the oil should reach the same temperature, to explode the lamp.

[For further details see report.]

LABORATORY WORK.

The usefulness of the laboratory increases daily, many incidental questions finding answer there. Water analyses have been made as usual and a few examinations of foods.

The work of the laboratory would be much facilitated if I could have a laboratory assistant constantly at work there. At present he does all my clerical work beside. The care of correspondence, of the library and of distribution of reports, circulars, tracts, etc., with the record of daily work, is now enough to employ the time of a competent clerk.

The *library* of reference is increasing. We are now preparing a new reference catalogue which will increase its value.

It is proper that I conclude this report with an expression of my hearty thanks for the unswerving support which the board has given to me as their executive officer and secretary during the thirteen years which have seen it grow from feeble beginnings into a recognized power for good in the State, and to an honorable position among similar organizations.

That work is rapidly increasing in extent and variety, making larger demands upon its members and officers, and involving also more expense.

I trust that the board will impress this fact upon the legislature, and that no lack of means may be permitted to embarrass our efforts.

The financial statement gives in detail our expenditures from January 1, 1883, to August 1, 1884.

Respectfully submitted,

CHARLES N. HEWITT,
Secretary and Executive Officer.

APPENDIX.

SMALL POX.

Tables giving summary of Small Pox outbreaks during period between January 1, 1883, and August 1, 1884, in Minnesota.

SUMMARY OF SMALL POX OUTBREAKS IN MINNESOTA BETWEEN JANUARY 1, 1883, AND AUGUST 1, 1884.

	Source of Infection.	First Case Taken Sick.	Date of First Report.	Reporter.	Number Cases.	Number Deaths.	Number Families Infected.	Number Persons Quarantined.	Date of—Last Case. Raising Quarantine.	Hospital or Pest House where Treated.
Trout Lake Ranch, twenty miles above Grand Rapids.	Home Hotel, Minneapolis.	Dec. 9 or 10, 1882. J. Carney.	Dec. 22, 1882.	Dr. E. H. Belyea.	2	1	1	....	....	1 Case. 0 Death. Minneapolis
Doyles' Ranch, ten miles from Grand Rapids.	First Case, Trout Lake, J. Carney.	E. Porter. Dec. 30, 1882.	....	Dr. E. H. Belyea.	3	2	....	....	....	
Caldwell's Camp	J. Carney, Trout Lake.	Jan. 18, in Camp.	....	Drs. Van Cleve and Scoboria.	20	9	....	....	....	1 Case. 0 Death. Grand Rapids. 2 Cases. 0 Death. Aitkin. 2 Cases. 1 Death. Trout Lake.
Wentworth and Fawcett's Camp.	Trout Lake.	Feb. 9, 1883, at Grand Rapids	....	From Camp. Dr. Scoboria.	6	2	....	....	....	5 Cases. 2 Deaths Grand Rapids. 1 Case. 0 Death. Aitkin.
Cook Bros.' Split Hand Camp.	....	Jan. 28, 1883, at Aitkin.	....	Dr. Brackett. In Camp.	18	2	....	....	....	1 Case. 1 Death. Grand Rapids. 1 Case. 0 Death. Aitkin. 4 Cases. 1 Death. Minneapolis.

SUMMARY OF SMALL POX OUTBREAKS IN MINNESOTA BETWEEN JULY 1, 1833, AND AUGUST 1, 1884.

	Source of Infection.	First Case Taken Sick.	Date of First Report.	Reporter.	Number Cases.	Number Deaths.	Number Families Infected.	Number Persons Quarantined.	Date of—Last Case. Raising Quarantine.	Hospital or Pest House where Treated.
Milligan and Leavitt's Camp.	Doyle's Ranch	Feb. 12, 1883, at Grand Rapids			4	1				3 Cases. 1 Death. Grand Rapids.
Richardson's Camp	Doyle's Ranch	Jan. 27, at Grand Rapids.			1	0				1 Case. 0 Death. Grand Rapids.
Henderson and Gibson's Camp.					2	0				
Grand Rapids					* 0 †15	*0 †7			April 20, raised quarantine.	
Aitkin					* 0 † 5	*0 †0		†45	April 4, raised quarantine.	
Minneapolis		Jan. 1 to May 20, 1883.		Dr. Brown	*35 † 5	*14 † 2	19			
Indians of Lake Winnebegoshish.	Caldwell's Lumber Camp.	Jan. 19, 1883	Feb. 11	Mr. Manzer & Drs. Walker &Scoboria.	25	25			Feb. 27, last case. May 14, quarantine raised.	

* Native. † Camps.

Indians near Caldwell's Camp.	Caldwell's Camp		January 23	Dr. Van Cleve		10				
55 Brainerd	Lumber Camps	Feb. 8	February 12	Mayor of Brainerd	*0 ‡1					The Camp to which this Case belonged not reported.
Duluth	Lumber Camps		January 25	Daily paper	*0 ‡1	1				Camp not reported.
Watertown, Carver County.	Not given	February 5, 1883	February 15	E. Hamlin. Dr. A. C. Lewis.	3	0	1		March 1	
Northwest Wisconsin	Pennsylvania. (?)	March 7	March 17	Health Officer of Stillwater.	§2					
St. Paul			April 7, 1883	Dr. Hand	3					No report after first.
Maple Plain, Hennepin County.	American House, Minneapolis.	April 1	April 14, 1883	Dr. Fassett	3	1	1	1 family	April 26	
Morris, Stevens County.	Pineries near Aitkin.	Previous to April 9.	April 13, 1883	Dr. H. L. Hulbard	1	0	1	1 family	April 20	
Long Lake, Hennepin County.	St. Paul. (?)	April 6	April 19, 1883	Dr. C. E. Dow	1		1	1 family	April 28	
Chanhassen, Carver County.	Kramer Hotel, Minneapolis.	April 16	April 21, 1883	Dr. A. C. Lewis	2	1	1	42 pers.	May 12–19	
Wabasha, Wabasha County.	Wisconsin Railroad Hands.		April 25, 1883	Drs. Low and Milligan.	5	1	1	1 family	May 12	

* Native. ‡ Pineries. § At Stillwater.

SUMMARY OF SMALL POX OUTBREAKS IN MINNESOTA BETWEEN JANUARY 1, 1883, AND AUGUST 1, 1884.

	Source of Infection.	First Case Taken Sick.	Date of First Report.	Reporter.	Number Cases.	Number Deaths.	Number Families Infected.	Number Persons Quarantined.	Date of— Last Case. Raising Quarantine.	Hospital or Pest House where Treated.
Duluth	Fargo, D. T.		April 27	Dr. J. C. Rosser						
Brainerd	Duluth		April 27	Dr. Rosser and Dr. J. R. Howes.	1					
Dollymount, Traverse County.	Minneapolis or Long Lake.		May 8	Dr. W. F. Holden, Herman, Grant Co	13	2	3		June 22, approx.	
St. Michaels (Frankfort Township) Wright County.	Unknown	May 2, 1883	May 24	Dr. Pinault, Osseo	59	6	17		July 11	
Otsego, Wright County	St. Michaels	May 23, 1883	May 29	Dr. Scoboria	8	0	2		July 14	
Hassan, Hennepin Co.	St. Michaels		May 29	Dr. Scoboria	1	1	1			
Corcoran, Hennepin Co.	St. Michaels		June 4	Dr. Pinault	6	0	1		June 30	
Elk River, Sherburne Co	St. Michaels		June 1	Dr. Whittimore	1	1	1			

Greenwood, Hennepin County.	St. Michaels	...	June 5	Dr. Fassett	1	0	1	...	...	*
Leaf Mountains, Otter Tail County.	Norwegian Immigrant	June 10	June 18	Dr. Titcomb	4	0	2	1 house.	...	
St. Paul	Clothing from Lumber Camp.	...	June 29, 1883	Dr. Hoyt	11	4	...	...	...	
Munson, Stearns Co.	...	...	Aug. 16	Dr. H. Schmidt	1	0	...	...	...	
Hallock, Kittson Co.	Winnipeg, Manitoba	Nov. 18 to 22, 1883.	Nov. 22, 1883	L. N. Eckland	1	0	...	...	...	

* Totals of outbreaks at St. Michaels: Number cases, 76; number deaths, 8; number families infected, 23.

TOTAL.

No. towns and townships infected (including 8 camps)			31
No. distinct outbreaks			17
No. cases	Whites	225	
	Indians	35	260
No. deaths	Whites	43	
	Indians	35	78
No. of families infected as far as reported			54
No. of cases in these families			146
No. deaths in these families			28
No. cases in lumber camp outbreak (including direct escapes)			58
No. deaths in same			17

December 22, 1882, secretary received a letter from E. H. Belyea, M. D., Grand Rapids, Itasca county, dated December 18th, as follows: "Called to see a man brought down the river from one of the camps, found the case variola — about six days standing, vesicles abundant on all parts of body, almost confluent on face — pulse, 120; temperature, high — removed patient to small house some distance from this village; hired nurse who had variola some years ago; have given up my other business and attend him. This being an unorganized county there is no health or other organization. I await your advice in the matter, and if there is any appropriation, in such case would request the benefit of it. Patient, a man about 45, was in Minneapolis three weeks before he came here, stopping at the Home Hotel. I shall use every precaution to prevent spread of contagion."

Under date December 22, 1882, on receipt of above, secretary wrote to Dr. Belyea, "I send you copies of tracts on small pox and infectious diseases for distribution; please act for me in your town and adjacent district; inquire as to the origin of the case in your hands; if necessary, go to the camp whence he came; take such other steps as are necessary, following guidance of the circulars, to control any cases you find; have ordered thirty points of vaccine sent to you; use it on children, if there are any, first; use the "eighth day lymph" from them for adults, as the best and quickest in operation.

Report immediately by mail whence your patient came. I rely on your judgment not to spend more than absolutely necessary to control the disease. Your pay will be $10 per diem. Telegraph from Aitkin, if necessary; anyway see that your letters come through and do not wait a weekly mail. Have requested postmaster of Aitkin to forward the letter." Secretary ordered, under same date, Lambie and Bethune, St. Paul, to forward 30 points of vaccine to Dr. Belyea, under cover postmaster of Aitkin, with request to forward immediately. Under same date, secretary wrote to postmaster of Aitkin, "a case of small pox at Grand Rapids, under care of Dr. Belyea; may be more beyond. Enclosed find instructions for Dr. Belyea, which I beg you to forward to him by very first opportunity, and vaccine for him through you, which please forward in same way.

"It would be real economy for your local authorities to send this correspondence and virus to the Doctor by special messenger, as protection at Grand Rapids means protection to you; please write what you do in the matter."

Under same date, secretary wrote to secretary of local Board of Health of Minneapolis, "Will be in Minneapolis to-night; should like to meet yourself, Dr. Cockburn, Dr. Ortman and Dr. Spring, at your office at 10 A. M. to-morrow, to learn the exact condition of affairs as to small pox. Is it likely that any laborers from your infected district could have gone there from the lumber camps?"

From Grand Rapids, under date of January 2d, Dr. Belyea writes:

"Letter and circulars received; patient died December 25th, fourteenth day of disease. Was brought down from camp during beginning of eruption; exposure and poor accommodations induced congestion of the lungs. Every precaution has been used; so far no more cases. Nearly all up this way have been vaccinated except Indians, whom the government should protect, Difficult to trace the infection. Patient had been working at Glendive, Montana, until three weeks before coming here — that three weeks he stopped at Minneapolis, in the Home Hotel, whence he came, via Aitkin, here. Case confluent; on fourteenth day very offensive; was buried by myself and nurse to prevent exposure of others. His name was John Carney, native of New Brunswick. The camp whence he came is seventy miles above here, in the woods. Will not go there until I hear from you."

Jan. 3, 1883, Dr. Belyea sent messenger to Aitkin with a dispatch to secretary, notifying him of two more cases variola, sixty miles apart, requesting him to send up a physician.

On January 19th he was informed that "messages did not reach secretary, but one of the messengers went to Duluth and brought up Dr. Van Cleve, who is now at Mr. Caldwell's camp, sixty miles from here, attending the case." Dr. Belyea attended the other, nine miles from Grand Rapids, till the patient died of the confluent form of small pox.

He reports under date of January 18th, that "he has two more cases at same place, Doyle's Ranch, a man's wife (squaw) and child. Send physician if necessary. When Van Cleve returns, will report further." This information reached Secretary January 30th.

Under date of January 23d, Dr. Belyea writes:

"Dr. Van Cleve returned from Caldwell's camp, sixty miles north from here. Fifteen cases of small pox among whites and Indians and two deaths there; sick quarantined and cared for as well as possible; impossible to prevent men that have been exposed from going down river; they must be stopped at Aitkin.

I have four cases at Grand Rapids under charge. Dr. Van Cleve has gone to Duluth. Notify government doctor at Leech Lake or Government Dam respecting the Indians coming from the wigwams near Caldwell's Camp.

If you think proper send team with physicians and medicines; confer with doctors at Aitkin as to men coming from Rapids; a number have gone down who were exposed here."

Under date January 24th secretary received (January 26th) notice of the organization of the local board of health of Aitkin, through Mr. J. B. Bassett, Minneapolis; A. N. Tibbits, chairman.

Answered January 26th: "Telegraphed you to appoint health officer and put him in communication with me and Dr. Belyea, of Grand Rapids. Dec. 22, 1882, wrote your postmaster calling your attention through him to this outbreak, and requesting you to forward virus to Dr. Belyea. The first thing to do is to protect yourselves. Let health officer vaccinate all free, who accept, at board's expense. This is a safe and sure course. Instruct him to watch all travel between you and infected districts, and use judgment as to permitting any one coming into town from there. Let him vaccinate all coming who will accept it, making it a condition of coming into the village for all. Have written Dr. Smith, member of our board at Duluth, to go or send a physician to look the ground over and see what this board can do further to help. Do not let the people get scared about this matter. All thoroughly vaccinated are safe, and thorough vaccination with humanized virus can be obtained in five or six days; animal virus takes sometimes eight or nine days. Dr. Belyea likely has some humanized virus. I will try to get a scab to send you. Use it on yourselves and families and set the example. If a case of small pox occurs, seclude it in a house by itself with a nurse.

Above all things avoid panic and preach and practice vaccination."

Same date (January 26th) secretary wrote to J. B. Bassett, Minneapolis, the above facts, and in addition, "the great difficulty there, is seclusion of sick; the disease often existing several days before its character is known."

January 26th, telegrams, etc., through Dr. Leonard, Minneapolis, were received giving notice of the outbreak. Secretary answered in addition to the above facts, "money and its expenditure is what delays the action of such (local) boards. Everything was in train in our office more than a month ago.

January 28th, secretary, owing to great excitement among lumbermen, and fear of spread of disease further, went to Brainerd and was there and at Aitkin on Monday the 28th, and wrote Dr. Belyea: "I have organized a health force under charge of Dr. J. C. Rosser, Brainerd, assisted by Dr. Scoboria of Elk River. They will have seen you before this and explained their orders; have informed Dr. Rosser that you will co-operate with them in every way. He will explain details and attend to Caldwell's camp; have sent him abundant virus."

For further details of secretary's actions, see his report.

Drs. Rosser and Scoboria went into the woods at Grand Rapids, Monday, January 29th.

During the secretary's absence, Mr. Bagley visited Red Wing to see him. Finding him absent he made the following statement to Mr. J. B. Gould, assistant in the office: "That the lumber dealers having camps in the infected locality had endeavored to conceal the fact that the disease which had appeared among them was small pox, but endeavored to make the men believe that it was measles or something of that sort. He did not state that while the facts were concealed that they took any steps to quarantine or confine it, or that they made any effort to report it or refer it to any authorities for action. Stated that if the men knew it was small pox the camps would be stampeded, and when it was known, the camps were stampeded, fifteen men leaving. Mr. Bagley further stated that the first case who came from Montana stopped in his camp over night just before his attack, going further north several miles to other camps; returned after several days and would have stopped in Mr. Bagley's camp again. His face was suspicious then. The foreman called him out of the camp, told him he couldn't stay, put him on a sled, took him directly to Grand Rapids, where he died in a few days.

As to vaccination, stated that his camp cost him $125 per diem, and must make $200 per diem to cover previous expense; that some who had been vaccinated had been laid up ten or twelve days."

Mr. Bagley telegraphed Dr. Hewitt to meet him in Minneapolis, which secretary failed to receive.

On secretary's return, he found a letter from Mr. S. C. Bagley, February 1st, representing lumber camps, calling for more physicians. "Camps are so far apart, ranging from five or six to thirty or fifty miles apart, and if something more than sending a preliminary surveying party is not done, we shall have one of the nicest little visitations Minnesota has had since the Sioux outbreak."

Secretary answered, February 2d: "Sorry not to have met you. Realize fully the danger of the lumber camps, and regret as much as anyone that the fact was not telegraphed to this board earlier. I understand the facts were concealed for fear of panic—a great mistake. Having no other information, I relied upon Dr. Belyea; steps taken by me were to regulate the matter as respects vaccination, inspection, quarantine and hospital at Aitkin and Brainerd, and on Northern Pacific Railroad. On 27th and 28th of last month I sent Drs. Rosser, of Brainerd, and Scoboria, of Elk River, both experienced in small pox, with vaccine and supplies, to establish a quarantine and hospital and vaccine station near Grand Forks.

(They went up on the 29th.) They are on their way to Caldwell's with vaccine and supplies, vaccinating as they go and come—all from a common centre and under a common control. There are two physicians at Aitkin at work, besides one physician from Minneapolis and one from Brainerd are said to have arrived. Who sent them, I don't know.

Case already removed from camp near Swan River to hospital near Grand Rapids. You can assist by securing vaccine for all the camps not yet provided for, of the Minneapolis lumbermen, and forwarding to Dr. Rosser, with directions for whom you wish it used. I find from an experience of ten years in my office these methods are the best. Understand though that time lost early in the outbreak (before we knew of more than a single camp infected, and that reported quarantined, men vaccinated and sick secluded, by the phyician, Dr. Belyea), cannot be regained.

Probably many will be sick, exposed there, which we cannot now help but we will use every precaution. Lumbermen can help us greatly by coming behind us and by the early information of new cases and by cordial co-operation."

To go back a little in the record, January 28th, secretary went to Brainerd and Aitkin; organized local boards; appointed Dr. J. C. Rosser, of Brainerd, health officer in chief of infected districts, with Dr. C. Q. Scoboria, of Elk River, as assistant.

On his return from the infected district, January 29th, secretary met the lumbermen of Minneapolis at the Nicollet House, explained the situation, asked for their co-operation and for supplies of vaccine, old cotton cloth, linen, towels, and any other supplies for the sick which they could collect.

Under same date (January 29th), secretary forwarded two hundred and fifty points of vaccine to Dr. Rosser.

January 30th, secretary wrote following instructions to Dr. Rosser:

"Governor approves my action and the use of the deputy sheriff till you can get things into such shape that we can judge just what is wanted. I rely entirely on your knowledge of the country, the men, the Indians and the disease, to organize a station with Dr. Scoboria, and to arrange the camp of detention (quarantine) as near the hospital buildings as practicable. I write by this mail to Dr. Belyea of Grand Rapids to report to you with Dr. Scoboria. When you have arranged the station, etc., if in your judgment best, leave Scoboria in charge and go, or send him, to Caldwell's, working thence down with vaccine, so far as possible. I advise to concentrate the sick as near together as possible and to destroy by fire camps which they have used, unless, in your opinion, it would be possible and policy to disinfect and save them. Scoboria and Belyea had better have territory assigned to them for vaccination and inspection. Use every means to quiet the fear of the disease among the men, telling them that you represent the executive officer of the State board for their protection from infection and for their care, if sick; *prevent panic* and instruct your assistants to do so, too. As to deputy sheriffs, select them from the lumbermen themselves; men in whom they have confidence will enable you to control them. You should as far as possible detain suspected parties in their own camps, as cheaper and better every way. Send a runner after the Indians, as you agreed, and let me know at the earliest moment, the danger to be anticipated from that quarter."

Secretary notified Dr. Belyea on same date of the above facts.

January 31, N. Tibbits, chairman of the local board of health of Aitkin, reports: "Quite a number quarantined there, and the excitement on the wane."

Under date January 24th, the secretary had written to Dr. Smith of Duluth, to go or send to Aitkin; notifying him also that an infected man was reported to have gone from the camps towards Duluth, and thus putting the local board of health there on their guard against such invasion.

January 31st, Dr. Smith replied: "Dr. Van Cleve has been there. You are correct about the case of small pox; was quarantined immediately; every precaution has been taken."

February 1st, secretary notified local boards outside the infected district and along the line of N. P. R. R. to be on their guard, and sent them instructions and circulars.

Under date February 5th, Dr. Rosser reports: "Proceeded to Aitkin and thence to Grand Rapids, according to your instructions, and, aided by Drs. Brackett and Scoboria, vaccinated all the camps west of Mississippi River, between those two points; reaching Rapids, met Dr. Belyea; in company with him and Scoboria, visited the patient at that place. Called the citizens together, organized a board of health, provided a pest house and quarantine building; found people anxious to assist. No further danger of the men leaving their camps without permission. The line of infection quite narrow. All damage was done twenty-five days ago; had it not been for Dr. Belyea, that country would undoubtedly have suffered; he recognized the disease early, but his opinions were disregarded by Mr. Caldwell and others; large sums of money were wagered to give potency to their motives. A reaction has taken place in Dr. Belyea's favor and he is in charge of the pest house at the Rapids. No one will be permitted to leave that region without his permission. All the trouble that is to be apprehended lies north of the Rapids. I may safely say that we have the disease under control, unless it is carried by way of Duluth. There are a great many to be vaccinated; five doctors to do the work.

Mr. Fawcett, of Wentworth & Fawcett, met us at the train, and took Dr. Scoboria to his camp. On the way up he will vaccinate Gusta & Watson's camp, and five other camps. Caldwell has taken his own doctor to his camps, which are ninety miles north of the Rapids. Dr. Graves has charge of Bagley's camps, and also of the camps on Swan River up to White Oak Point, on Mississippi, twenty-five camps in all.

The lumbermen on the Willow and Moose, and on Split Hand

Rivers, thirty camps in all, have employed Dr. Brackett, of Minneapolis. Dr. Van Cleve is in charge at Aitkin. With these physicians in the field, the suppression of the disease is only a question of time. Dr. Belyea will report as to quarantine and pest house at Grand Rapids."

February 6th, N. Tibbitt, chairman board of health, Aitkin, writes, complaining of the lax quarantine at Grand Rapids, and of the expense thrown upon Aitkin thereby.

Secretary made inquiries at St. Paul and Minneapolis as to supply of tents and cost, as compared with barracks, for quarantine station, at Aitkin.

February 8th, secretary met delegation from Aitkin as to provision to be made for quarantine of sick, in Dr. Hand's office, St. Paul. Agreed to ask legislature for money.

February 8th, secretary telegraphed Dr. Rosser, Brainerd, about complaints as to quarantine at Grand Rapids, and February 10th, to Dr. Van Cleve, of Aitkin: "Quarantine all suspected men. Notify me and Brainerd of all who come down the road."

February 10, secretary telegraphed Dr. Smith, Duluth: "Go to N. P. Junction; quarantine men coming from infected camps; in case of doubt always quarantine; go immediately, and telegraph me." Next day, February 11th, Dr. Smith established quarantine there.

Secretary received notice same date (February 10th,) that men had come down from infected camps, and that five cases were now in Minneapolis from that source.

February 14th, secretary telegraphed to surgeon of N. P. R. R. hospital at Brainerd, and to the mayor of Brainerd, as to the efficiency of their quarantine.

February 10th, Dr. Van Cleve, health officer of Aitkin, wrote that they had secured a temporary building for quarantine purposes, which would accommodate forty patients, and that they had only twenty-seven in quarantine then and room for thirteen more; no more cases have been received since 7th. "No person leaves town without my permission; I go to every train and examine every passenger. Roll is called morning and evening at quarantine. If anyone escapes we will telegraph you and Brainerd."

He had already telegraphed to the same effect: "The men are in good spirits, content with treatment.. We have twenty-eight of Caldwell's men in quarantine, and one in hospital (pest house)."

Under date February 11th, Dr. Belyea explains to Dr. Rosser the reason for the escape of the men: "The marshal could not detain part of Caldwell's men, I could not detain them and refused them pass; they went in spite of us. I have three new cases in pest house, one from Fawcett's camp, Big Forks; one from Cook's camp, Split Hand, and one from Caldwell's. We have a quarantine camp arranged to-day, so that no person from the infected district shall pass us."

February 12th — Mr. Bagley notifies secretary of the escape of two men from Cook's camp.

February 12th — Complaint of two hundred and seventy-five citizens of Brainerd against the location of their pest house was received by secretary.

Same date secretary telegraphed the mayor to explain, who immediately answered, explaining and giving diagram of location and stating that but one case was or had been sick at pest house, and that no one was in quarantine. Secretary went up to Brainerd and arrived in time to see the pest house burning.

February 15th, secretary wrote chairman board of supervisors, town of St. Anthony: "Health officer of Minneapolis reports men who went from your town to lumber camps above Aitkin returning with small pox. Keep close watch of such men and investigate all cases of sickness among them. Remember varioloid, however light, is capable of spreading small pox; better consult with health officer of Minneapolis." Secretary wrote the same information to chairman of board of supervisors of town of Crystal Lake, Hennepin County, and same to supervisors of town of Minneapolis.

Under date February 13th, Dr. Rosser wrote as to quarantine at Grand Rapids, complained against by Aitkin: "The country is too extensive to establish a strict quarantine at the Rapids — it would take a regiment of cavalry to do that. I think we can manage by bringing all the men who have been exposed to this place at once."

Secretary answered: "What provisions do you advise at Aitkin, tents or barracks, and how many?"

Dr. Rosser answered: "Barracks less expensive; want accommodations for forty men."

From Brainerd, under date February 14th, surgeon of N. P. Hospital reports: "Suspected persons not allowed to board trains at Aitkin. Nearly all employes and their families vaccinated."

Same date, Dr. Van Cleve, Aitkin, reported: "Three in pest house and thirty-three in quarantine; all doing well."

February 14th, Dr. Rosser writes: "Reached Aitkin yesterday from up river. There is great difficulty in preventing the men from coming from their camps."

February 15ih, secretary visited Aitkin, inspecting hospital and quarantine.

Dr. Rosser telegraphs, February 15th, from Brainerd: "Men can be taken care of at Grand Rapids; unnecessary to take them to Aitkin. A few Indians on Big Forks have the disease. It is not general among them, so they report to me."

February 15th, Dr. Van Cleve, health officer of Aitkin, writes: "As to propriety of burning infected clothes and furnishing others, I have done so heretofore, but it is expensive."

February 15th, Dr. Rosser writes: "Do not believe it necessary to construct barracks at Aitkin. The men referred to by Dr. Belyea are the same men whom the newspapers have been expatiating on for the past week. It is so difficult for a stranger to enter a camp, that I regard the further spread of the disease as improbable; however, if Fawcett's camp breaks up, we may have to quarantine his men at Aitkin. Barracks at Aitkin are unnecessary; present accommodations are sufficient."

February 16th, Dr. Belyea writes to Dr. Rosser: "Cases all doing well. I hear there are cases of variola in Cook Bros.' camp on Split Hand River, not quarantined, under charge of Dr. Brackett; do you approve of that plan? No more cases reported as yet, and I anticipate no further trouble, though we may have a few cases of varioloid, but none dangerous. About all the men well vaccinated. Much sickness in the camp and vicinity; lumbermen are alarmed, but some of the cases may prove to be variola."

Under date of February 20th, health of officer Aitkin reports operations of quarantine camp and pest house to date:

"January 30th, first man in quarantine from Richardson's camp.

February 3d, six men from Gustin & Watson's camp; having no police, four escaped.

February 4th, three remained in quarantine.

February 5th, one man received.

February 6th, quarantined fifteen of Caldwell's men; one with variola taken to pest house; had in quarantine then, eighteen; policemen began work; one of them discharged for drunkenness; one policemen on duty at two dollars per diem.

February 7th, thirteen more of Caldwell's men received.

February 8th, thirty-three men, all told, at the quarantine.

February 9th, five men discharged, twenty-six remaining.

February 10th, one man received.

February 11th, three men from Fawcett's camp received.

February 12th, four men from Berry's camp received and one sent to pest house.

February 13th, quarantined a "tote" teamster, making number thirty-three.

February 16th, no change to date; sent teamster to pest house with varioloid.

February 19th, discharged thirty-two men, holding over two for a few days.

PEST HOUSE.

January 28th, first case received from Cook's camp.

February 6th, second case, a man from Caldwell's camp, with pure variola.

February 12th, third case, another man from Caldwell's, sick with varioloid.

February 17th, discharged the first case three weeks after his receipt. Had two nurses on duty at pest house, one from January 26th and the other January 29th, at two dollars per diem each."

February 17th, letter from Dr. A. P. Brackett of Minneapolis, dated Chase & Miller's lumber camp, Quadima Lake, reports, (letter without date, but envelope dated February 17th): "There are several (five) light cases in Cook's camp of varioloid; one of small pox, I sent to Grand Rapids to pest house. All the camps below the Forks well vaccinated but two. Now what should you suggest as to the disposition of the men there when they come away? The camp will of course be burned; further I do not know whom Dr. Rosser left in charge at Grand Rapids, but this is certain: The quarantine there amounts to nothing, as men pass there and thence down by rail who have been exposed. Indeed, some have been passed who broke out with small pox; one at Aitkin and the other at Minneapolis; if something more stringent is not put in force above, in the way of quarantine, I cannot see what will hinder a widespread outbreak of the disease. I volunteer this information because Messrs. Miller, Chase & De Laittre have retained me for a short time."

February 20th, secretary wrote: "DOCTOR—Your letter, with no date, at hand. Sorry to hear such charges against Grand Rapids. Drs. Belyea, Scoboria and Rosser, the last in charge, seem to have failed, if your report is true. I have forwarded the charges to Dr. Belyea for explanation. It would have been better if you doctors had co-operated together in this matter. I can assure you, however, that no new cases have come through for several days. When I was at Aitkin, Dr. Scoboria, just from Caldwell's camp, reported quarantine so strict that he had to sleep outside of camp on his way down."

Under date February, 21st, Dr. Rosser, replying to Dr. Belyea's letter (of February 16th, p. —,) wrote: "Yours of sixteenth handed me to day. Cook's camp is a quarantine unto itself, with Dr. Brackett in charge. Give my compliments to Dr. Graves, stating that State board function is to stop spread of small pox. If lumbermen want a physician they must pay him. The State intends to do its duty, but cannot afford to pay physicians to visit camps. Dr. Scoboria will reach you in a few days by the Snaky Hollow road."

February 23d, Dr. Scoboria reports from Grand Rapids: "Met Dr. Firth, of Aitkin, on his way back from Caldwell's. Reports another death there, making eight in all; the rest of the sick there are doing well. Two new cases have occurred in Fawcett's camp; brought here to pest house. I go there to-morrow, and shall watch that camp and Caldwell's for a few days. Dr. Belyea is doing well here. We have to contend with indifference and prejudice. Nurses hard to get. Men at Cook's camp, Split Hand, quarantined."

Under date, February 23d, L. F. Knox, secretary of local board of health of Grand Rapids, forwards a petition to governor for $3,000, stating that they have six cases in pest house.

March 2d, secretary acknowledged the receipt of the petition to the governor, from Grand Rapids, for $3,000 for use in small pox. In notifying the governor he stated "the disease is not increasing, and will report any change to you as it may occur."

Aitkin, February 24th, Dr. Van Cleve, health officer, reports: "three cases in pest house. One officer and one man in quarantine, the last will be discharged to-morrow."

Under date February 27th, Dr. Brackett reports from DeLaittre camp, Quadima Lake: "Yours of 20th at hand. Since I wrote, two new cases of varioloid in camp in Henderson & Gibson camp at Split Hand. All cases I have seen were infected from the original case at Cook's camp. The cases were light and all nearly well; the only case that died was one of small pox (?) that I sent to the Rapids. As I have a nurse with me I tried to keep him, but Cook Brothers would not have him in their camp. That camp has been unhealthy for over two years — building used several winters and not renovated in the least — eight cases of varioloid there, one severe case of facial erysipelas and eight or ten are now showing signs of typhoid, one case of incised axe wound refused to unite, though I have tried everything. The camp is illy ventilated, infernally nasty, dark, damp, and the stench horrible. Shall insist upon burning both camp and bedding. Don't believe the logging camp can be disinfected to render it fit to live in. Quarantine in camps below Rapids my doing; allow no one in who don't belong to camp; sorry Scoboria had to camp out, he'll survive it. As regards co-operation, I am under contract with these men only, but would have been glad to render any assistance in my power if I had been asked. No cases below Rapids except two convalescents. Vaccination recent and successful. Quarantine will not be removed until the drive, or until I leave here two weeks hence. Will write if anything new transpires, to you. Can I make the destruction of such a camp as Cook Bros., compulsory?"

Grand Rapids, February 28th, Dr. Belyea reports: "As to men not being detained at the Rapids; when Caldwell's men passed, we had no place to put them; not boards enough to make a coffin. Since the quarantine house (an old warehouse) was prepared, no one has been allowed to escape. The country is very large, and it is impossible to prevent men going through the woods, if they were so inclined, but I have not heard of any going that way. Dr. Brackett has not been within twenty miles of the Rapids. Any men who go down on Doctors Graves' or Firth's pass, I am not accountable for."

March 2, in reply to telegram to health officer from secretary, both he and President N. Tibbitts, of the local board of Aitkin, wrote that the quarantine house had better be kept open for a time longer at moderate expense, to which the secretary agreed.

Under date March 2d, from Grand Rapids, Dr. Belyea reports two deaths at pest house since last reports. Ten men in quarantine now, all from Fawcett's camp; no further danger from Milliken's camp, as it is eighteen days since the last case; no word from Fawcett's; Dr. Scoboria is there attending cases. Have written passes for a number of men who have been exposed, to go below. In two weeks' time the pest house cases will be discharged. Before long the men will be leaving the woods. I suppose if there is no contagion afloat it will be safe to let them go. Will watch closely and report."

Under date March 6th, health officer Aitkin reports: "Two in quarantine, received last night; discharged one patient from pest house, two will remain. Will send inventory of quarantine fixtures to-morrow."

Under March 9th, health officer Aitkin: "Three in pest house; two coming down with small pox."

March 11th, from Aitkin, Dr. Scoboria reports: "As you advised, visited Fawcett's and Caldwell's camps on Big Fork, and staid nearly two weeks; found Fawcett's men well and vaccinated whenever necessary. Three cases have been taken to Grand Rapids as soon as sick. At Caldwell's the men are all well; the recovered from small pox are at work. One man died since I was there the first time, making eight deaths in the infected camp. There was a small crew composed of convalescents and some who had escaped. I fumigated the camp with sulphur, changed the men's clothes, burnt up the bedding and old clothes; Caldwell absent and not expected till last of the month. Wrote to him advising the burning of the camp or the tearing of it down and destroying it in some way. Trout Lake ranch was abandoned and burned. Returning to Grand Rapids, I found three men in the pest house, one in bed, the others convalescent. No men in quarantine; twelve there since building was opened. No further danger from Caldwell's, or Fawcett's, or Milligan & Leavitt's camps. Fumigated Doyle's ranch; it is as clean as it can be made. No one visits it however. Visited Cook's ranch on Split Hand. There has been twelve cases of varioloid in that camp. The last case occurred two or three weeks ago. The men claim their clothes were changed and fumigated and boiled, and their camp fumigated by Dr. Brackett. I advise to watch that camp till it breaks up and then quarantine the men until they come to Aitkin. Don't see what more I can do. Camp will break up in a few weeks. Dr. Belyea can attend to it. I advise that you officially order the owners of those camps to burn them. The people of Aitkin and Grand Rapids are very anxious that they be destroyed. Three cases in pest house in Aitkin; two convalescent, the other a case of varioloid the stage of incubation prolonged; was quarantined twelve days at Grand

Rapids—making fourteen days since he left camp. Then came to Aitkin quarantine, and was here several days before he broke out with the disease. He came from Fawcett's camp. One man in quarantine, teaming from Cook's camp, has premonitory symptoms. I think quarantine will have to be maintained at Aitkin till April, as the only safeguard against the spread of the disease below. Shall remain for a few days and consult with Dr. Rosser. The buildings to be destroyed are those belonging to Cook Bros.' Split Hand, Caldwell and Thomas Doyle's."

March 14th, Dr. Belyea Grand Rapids reports:

"Four cases in pest house—one convalescent, three varioloid—all the last cases showed no signs of eruption when they left Fawcett camp. Came here to be treated for fever—apprehend no further trouble from those camps but am watching—logging will be at an end in two weeks and men will begin to leave the woods for good."

March 20th, health officer Aitkin reports:

"One patient discharged from pest house, two remaining, one to be discharged in few days. Two in quarantine, both from Cook's camp."

Dr. Brackett, March 20th, wrote from Minneapolis:

"Just returned from camps below Grand Rapids. Henderson & Gibson's camp was disinfected and cleansed as well as camp could be.

Cook Bros., up to the time of my departure, March 12, made little or no effort to help matters in the least, it is utterly filthy, it ought, for safety of lumbermen, to be destroyed; it being on the main road is of necessity a frequent stopping place for travelers.

I think the Cooks will refuse to destroy it or its contents. As regards the outlook, I am of the opinion that every man in infected camps should be looked after as to clothing, etc."

March 21st, secretary sent letters with the complaints of quarantine to Dr. Rosser:

"Cook's camp is the one most complained of, please go up and look the matter over, seems to me that danger from small pox can be escaped by thorough use of sulphur; advise as to dealing with men as they come out of the woods. Confined to my bed by sickness, my excuse for any delay in telegraphing or writing, advise by brief telegraph and write. If you need me telegraph before noon any day, as I must take noon train to reach you."

Same date (March 21st) secretary informed Dr. Brackett and others that their letters of complaint had been sent to Dr. Rosser.

March 22d, secretary, as requested, advised health officer Aitkin:

"When a suspected man is taken to quarantine, if he has new or recent vaccine scars, give him a thorough bath, disinfect him and his clothes, washing what of the last can be washed, then discharge him. There is no use of retaining such men more than long enough for this work, and all men with clean record and recent vaccination should be passed."

Under date March 22d, Dr. Rosser answers inquiries of secretary as to danger of men coming from woods, says: "The possibility of such an an occurrence has been anticipated. Railroad authorities under my advice are active, using every effort; the bedding of lumber camps is never shipped or moved from camp unless to some other camp, so no danger is to be apprehended on that point, as the men who come out of the woods are given the necessary care and watched, I will go to Aitkin and then telegraph you if necessary."

Under date March 21st, Dr. Belyea, Grand Rapids, reports:

"Four cases in pest house, two convalescent, one ready for discharge, other two improving slowly, will be out of danger in a short time. No new cases reported and everything looks quiet."

March 24th, secretary wrote to Dr. Rosser and Van Cleve, Aitkin: "Letter at hand; fumigating cars with passengers in them is no use; at my request, the Cook Bros., Minneapolis, have promised health officer of Minneapolis, to destroy their camp and disinfect clothing afterwards. Subject to your knowledge of local surroundings, I cannot see why the buildings cannot be thoroughly disinfected of variola by sulphur, and the blankets, hung on ropes, etc., disinfected at same time. Urge this upon them, or better, send some competent person to do it."

Letter to Dr. Cockburn, above referred to, dated March 24th, requested him to "secure and send the names, camps, and dates of departure of the men whom you now have in hospital or quarantine, who came from camps up river, and of any others whom you heretofore had who came from there. A complete record, tracing the responsibility where it belongs, is very necessary for me in dealing with up-country matters. Any extra trouble or expense I will pay, as this board wish to get the facts. *Please see that this accouut is written up immediately.* Dr. Rosser went yesterday to Aitkin to take every possible precaution as to men when they come out of the woods; have notified Dr. Rosser of Mr. Cook's intentions."

March 26th, in answer to Dr. Belyea's letter, dated 21st, secretary wrote:

"You must be more formal and particular in your reports. When was the last person in quarantine, and what steps are you taking in respect to men coming out of camps? What is the condition of infected camps above Grand Rapids? Take every step necessary to induce the men in charge to use every precaution. Do not leave until you can close the hospital, and disinfect it and its contents. Destroy only such things as it will not pay to clean and disinfect. I never saw a building, close enough to live in in winter, which could not be perfectly disinfected by sulphur and ventilation — same of blankets and clothing, but not feathers in pillows or otherwise. Burn all straw, old rags, etc. All other things close up in the building for disinfection with sulphur, and after disinfection repeated, ventilate thoroughly. Greatest danger probably clothing brought out by men from infected camps. Send brief report by mail, and as often as possible otherwise."

Under date twenty-third March, Dr. Rosser reports from Brainerd:

"Just returned from Aitkin and happy to say that every precaution is being taken to prevent the spread of small pox both at Aitkin and Cooks and other lumber camps. Cook has abandoned Split Hand camp, allowing no man to enter it; has used sulphur freely, and will probably burn the house. Sheriff Willys, of Brainerd, and Knox, of Aitkin, reached Aitkin to-day from Grand Rapids and Split Hand, reporting matters as being favorable. Rapids the only place causing any anxiety."

Under date March 26th, Dr. Van Cleve, health officer of Aitkin, reports: "One case left in pest house, none in quarantine; expect Cook's men last of week to be quarantined long enough to wash clothes and bathe," as suggested by the secretary.

Unde. date March 26th, secretary wrote Dr. Rosser:

"Yours twenty-third at hand very satisfactory" — and informed him of instructions sent to Dr. Belyea.

Under date April 4th, health officer Aitkin reports: "Pest house closed; nurse discharged; quarantine closed. There are two more cases at Grand Rapids, but I think there will be no more trouble here."

Under same date (April 4th), Dr. Belyea, Grand Rapids, reports: "Yours of twenty-sixth at hand. Two men in pest house; convalescent. Discharged the nurse April 1st. Have attended the patients myself since, going to the pest house four or five times a day. Under your orders shall now remain to close the hospital. Caldwell's crew went down yesterday (third April.) Examined sleds and saw no blankets; one or two valises. Men had only the clothing they wore, as a rule. All danger is now past, except there may be some when the new crews come in to drive. Camps in vicinity of the Rapids burned the exposed buildings. I assume that was the case of the Big Forks camps. Can I disinfect quilts with batting stuffing?"

April 8th, Secretary telegraphed health officer, Minneapolis: "Be sure and notify all lumber firms not to send unvaccinated men on the drive."

The same to health officer, Stillwater, Aitkin, St. Paul and Brainerd.

April 9th, health officer, Minneapolis, reports: "Published notice to lumbermen in morning paper. Report from pineries says Cook Bros. sent up a crew of men and put them in their old winter camp, a few men finding where they were left, and came back to the city. I think your board should have insisted on this camping outfit being destroyed. Should a local board neglect such a danger they would hear from it, no doubt. No small pox here now."

To which Secretary replied, April 12th: "Letter of ninth at hand. In reply, hardly believe you serious in implying that this board have neglected to do what they would have insisted on a local board doing. March 21st, on receipt of Dr. Brackett's notice of danger at Cook's camp, (though suprised that he didn't attend to it himself while there,) sent his letter to Dr. Rosser, who made special trip to Aitkin, and reported "Cook has abandoned Split Hand camp, allowing no men to enter it. Used sulphur freely; probably burn the house. Under date March 24th, instructed Aitkin board to look after it, and, if necessary, to employ a competent person to perform disinfection under their direction. Have telegraphed your statement to Aitkin to-day."

April 12th, on inquiry, board of health, Aitkin, replied: "Cook in Minneapolis after men—intends to take them into infected camp."

April 13th, secretary wrote Dr. Rosser: "health officer, Minneapolis, complains Cooks are putting their driving crew into infected quarters, blankets, etc., and health board of Aitkin telegraph same thing—I wish you to make a sure thing of safety there. If not perfectly satisfied, inspect and disinfect for yourself. Dr.

Cockburn insists that buildings should be burned. I wish you could meet Cook on his return from Minneapolis. Communicate immediately with local board of Aitkin."

April 18th, secretary wrote again to Rosser: "More complaint from Minneapolis about Cook's camp. I hope you have satisfied yourself about it. Heavy blame to us if the disease appears in Cook's men from the clothing, bedding, etc., taken from the old camp."

April 20th, Dr. Rosser replied: "Yours of eighteenth just at hand. No word from Grand Rapids; have not been able to reach Cook, and for fear he would pass me, addressed a letter to Aitkin health officer, detailing the complaints made to you as to the condition of Cook's camp, and to impress on the Cooks the fact that if they did not obey instructions as to disinfection, etc., legal steps would be immediately taken; that I would bring him and his men out of the woods, and stop work until I thought it was safe. I would like to learn the grounds of complaint in Minneapolis, and what Cook said to that health officer; am inclined to think that, finding difficulty in getting men to go upon the drive unless sure his camps and outfit had been destroyed, Cook hoped that the State would burn his camp, etc., and pay him a good round price for them. If the Minneapolis health officer will let me know the source of the complaint, I am sure I can quell their apprehensions.

"Several lumbermen have had the politeness to inform me that they will not have their men vaccinated, and they too will drive over the same streams with Cook Bros.; besides, vaccination at this time will hinder the men from working; so, as far as I learn, none of the lumbermen fear Cook Bros. Traveling on the Mississippi is by steamboat. These boats run up to the Rapids."

Same date, April 20th, Belyea telegraphs from Aitkin: "The cases of small pox at Grand Rapids all discharged from the pest house on the seventeenth. Came down to-day. Everything closed up. Will stay here to-morrow."

Under date April 26th, Dr. Leonard, Minneapolis, replies to inquiries: "Have seen the Cooks, who state that they have men on the drive now who have been there six or eight weeks. Twentieth of March, possibly the twenty-third, Cook brought six or eight men to camp. They were vaccinated at Aitkin, on their way up, by Dr. Van Cleve."

Secretary wrote to Dr. J. C. Rosser, Brainerd, under date April 21st: "I enclose you a letter of this date, just received from the health officer of Minneapolis, giving statement of Mr. De Laittre that Cook's men are using bedding from infected camp on the drive. Please go up to that party and ascertain the facts, making sure, if you think necessary, by personal disinfection, that the bedding is safe. Why their camp should be selected for so much objection over others, you can perhaps explain after looking into the matter yourself."

Same date secretary wrote health officer of Minneapolis: "Your letter forwarded to Dr. Rosser with the request that he go to Cook's camp and look after the matter of his bedding. The record against your city, including, as it does, all the up river cases, is an unfortunate one. I hope you have the present outbreak so under control that further spread is impossible."

The health officer of Aitkin turned over the hospital and other goods paid for by the State to Dr. J. C. Rosser.

REPORT BY DR. J. C. ROSSER OF SMALL POX IN LUMBER CAMPS.

BRAINERD, MINN., March 25, 1883.

Dr. C. N. Hewitt, Secretary State Board of Health, Red Wing, Minn.,

DEAR SIR: According to your instructions, I left Brainerd on the twenty-eighth day of January last, accompanied by Dr. C. Q. Scoboria, of Elk River, to visit Grand Rapids and other points, and investigate the origin, and to make such arrangements as would be the most expedient in order to suppress the existing epidemic of variola, which was at that time threatening the whole valley of the upper Mississippi. On our arrival, we found Aitkin quarantined against the lumber camps north of that station. Under your personal direction and instructions there had beed organized a board of health, both quarantine and pest house were established, and the local board was in condition to protect that point, and also prevent the disease from spreading south and along the line of the Northern Pacific Railway. From Aitkin it was impossible to obtain correct intelligence as regards the extent of the epidemic, or the location of the various lumber camps that were thought to have been infected, as all was confusion and exaggeration.

Under these circumstances we deemed it advisable to separate and move on to Grand Rapids by two routes, and thus preclude the possibility of leaving, at any point, the enemy in our rear. We visited the camps situated on the Willow, Moose, Quadina, and Split Hand rivers, and vaccinated every man, woman and child, including Indians, found on the way. I arrived at Grand Rapids on the third day of February, and found that Dr. Scoboria had preceded me by several hours. A meeting of the citizens was immediately called. Organized a board of health and appointed two deputy marshals, to act in concert with the local board and enforce such sanitary measures as the health officer, Dr. Belyea, might dictate, in order to prevent the disease from being carried to and fro through the land. Quarantine and pest houses were also established, and Dr. Belyea placed in charge of the sick at that point.

With reference to its origin we learned that on or about the twelfth of December a man, an employe of a lumber company operating on the Big Forks River, came up from Minneapolis, was taken sick with what was supposed to be the measles, stopped at a hotel or a station house located on Trout Brook, twenty-five miles north of Grand Rapids, in Itasca County, was removed to Grand Rapids and died. This station house was the last stopping place on the road leading from Aitkin, and by Grand Rapids to the Big Forks, and the men going up into the Big Forks country usually stopped over a day or two to rest their teams; and from Trout Brook as from a centre, the disease spread to the Big Forks north, and as far south as Minneapolis, Brainerd, Aitkin, and to Cook's camp, fifteen miles south of Grand Rapids, on the Split Hand.

After the consummation of the above plans at Grand Rapids, Dr. Scoboria was sent forward to the camps on the Big Forks, the objective point being Caldwell's camp, with instructions to vaccinate and revaccinate, and give such information, and insist on such measures, as would best alleviate the sufferings of the afflicted, dissipate fear, and result in suppressing the epidemic. But on the Big Forks, especially, the damage had already been done. The lumbermen in that region had endeavored to hide from their employes, the public and State authorities, the nature of the disease. Even after they had been informed by Dr. Belyea, and subsequently by Dr. Van Cleve, that the disease was small pox, they did not hesitate to openly deride the diagnosis, and censured the doctors severely—threatening Dr. Belyea with violence, and insisted that he must keep his conclusions to himself. When they failed to control the doctors, they then asked them "to treat the disease as small pox, but call it by some other name." Thus hampered by selfish motives the doctors could do nothing towards its suppression. Employer and employe were thus turned against him, and whatever the doctors might suggest necessarily went to pieces when it clashed with such odds. By the time Dr. Scoboria had reached the camps on the Big Forks, a reaction had begun to set in from another direction. The suffering among the sick at Caldwell's camp, and the hardships to which even the healthy were subjected, left traces not easily effaced. And they had by this time learned that the State had come to their rescue; that the true nature of the disease was no longer questioned; that the secretary of the State Board of Health had visited that region, and set things in motion; and "*what shall we do?*" became a watchword among the lumbermen of that region! In order to save themselves, many of Caldwell's men boldly broke camp and made their way a distance of one hundred and fifty miles, without food or covering, by night, when the thermometer was down to forty or fifty degrees below zero, to Aitkin, where they were quarantined and cared for.

On Dr. Scoboria's arrival at Caldwell's camp, he immediately separated the sick from the well, arranged and disinfected the various camps, vaccinated the men, and set all things in decency and in order, and thus closed the epidemic on the Big Forks. Early in December, before the nature of the disease was recognized, a band of the Winnebigoshish Indians, under Leading Feather, was encamped on the Bowstring, hunting, and by communicating with Caldwell's camps became infected; and from the Bowstring they carried the disease back to Lake Winnebigoshish, where they were quarantined and cared for by the United States engineer, (engaged in constructing dams across the Mississippi and Leech Lake rivers, until the epidemic had subsided. Within one week after the State Board of Health had taken this epidemic in hand, what was the condition of things? At Brainerd, Aitkin and Grand Rapids well organized Boards of Health had been established, and the health officers placed in direct communication with the secretary of the State Board, and around the sources of infection all the necessary restrictions had been thrown, that was ultimately to result in its total suppression. The afflicted were being attended to by the proper physicians. The exposed were placed and administered to in comfortable quarantines, and the business affairs of the lumber camps assumed their usual aspect; and as to the existence of small pox, it was now regarded by all as a mere question of time.

Very respectfully,

J. C. Rosser, M. D.

REPORT BY CHARLES L. SCOBORIA, HEALTH OFFICER BY APPOINTMENT OF THE STATE BOARD OF HEALTH.

Daily report of work in small pox epidemic in Itasca County, 1883:

Dr. Chas. N. Hewitt, Secretary State Board of Health, Red Wing, Minnesota,

Dear Sir: In pursuance of orders from you, as per telegram of January 28, 1883, in the matter of small pox epidemic in Aitkin and Itasca counties, I took the train for Brainerd that same evening, and arrived there at 2 A. M., January 29th.

January 29th. Failing to meet you, I sought Dr. Rosser, and together we went to Aitkin, getting there early in the afternoon. Considerable excitement prevailed in regard to small pox. I found a board of health had been organized, of which Mr. Williams was chairman. There was a pest house, and one case of varioloid who came in on the twenty-eighth: name, James Robinson, of Wahpeton, Dakota; exposed at Doyle's ranch on the Mississippi. He is under the care of Dr. Van Cleve, of Aitkin. I had orders from Dr. Rosser to go on to Grand Rapids, and vaccinate all persons on the way whom I met at the ranches. In the meantime Dr. Rosser went to the camps on the Willow and Split Hand rivers. Started out late in the afternoon with a team and driver. He made eleven miles and stopped for the night. I vaccinated twenty-three persons whom I found at the ranches.

There are "stopping places" or "ranches" at intervals of ten or fifteen miles between Aitkin and Grand Rapids.

January 30th. We traveled thirty miles to-day. Vaccinated all I met on the way.

January 31st. My driver left me this morning and returned to

Aitkin with the team, pleading sickness as a reason for going back. I continued the journey with a teamster who stopped with us last night.

Arrived at Grand Rapids at evening.

Met Dr. Belyea here. He has been in this place since November, 1882. He saw and reported the first case to the State Board of Health.

This patient—Carney—came from Minneapolis early in December, 1882, and went as far as Trout Lake ranch—twenty-five miles north of Grand Rapids, where he was taken sick. He then came to Grand Rapids, where Dr. Belyea first saw him December 16th. He isolated and took care of him until he died, December 25th. Belyea has been in the employ of the State Board of Health since that time. The disease then appeared in Doyle's camp (ranch), nine miles above Grand Rapids, on the Mississippi. Edmund Porter, a half-breed generally known as Missouri, brought the disease to the ranch, having been exposed to Carney, it is supposed, when the latter first came to Grand Rapids. This man died; Doyle's wife also died. Doyle himself and child had varioloid and are recovering. Later a man named Hayward, from Richardson's camp, was exposed at Doyle's camp and was taken sick at Grand Rapids, in the hotel, January 27th. Dr. Belyea immediately removed him to a house known as Red Cloud's house, secured a nurse and is treating him now.

He says the people in this village are pretty thoroughly vaccinated. I visited both hotels and vaccinated all who needed it.

February 1st. This morning I visited the pest house with Dr. Belyea. Found Hayward had confluent variola. Is doing well. We then went to Doyle's ranch. Found only Doyle and his boy and a nurse, Woodard.

Doyle was fully recovered and the boy convalescing. No one stops at this ranch.

February 2d. Visited the pest house this morning. Started to go to Cook's camp on Split Hand, but met Dr. Rosser and party who had been there. Then returned to Grand Rapids. In the evening a board of health was organized, consisting of Dr. Belyea, Messrs. Casey, Knox and McAlpine. Messrs. Casey and McAlpine were appointed marshals.

Arrangements were made for securing a building and enforcing strict quarantine. Reports of small pox had come from Caldwell's camp on Big Fork River.

February 2d. I was directed by Dr. Rosser to visit Caldwell's camp, and the camps in that vicinity, and vaccinate every man. A team and driver were furnished me for the trip. Mr. Fawcett, of Wentworth & Fawcett, who had a camp on the Big Fork River, accompanied us.

February 3d. We set out February 3d, and were two days making the trip to Fawcett's camps, sixty miles north of Grand Rapids.

February 4th. We came this morning to McAlpine's ranch, at the head of Trout Lake, known as "Trout Lake Ranch," twenty-five miles north of Grand Rapids.

This was a stopping place for teamsters.

Here Carney was taken sick, on his way to join Caldwell's camp. We found two of Caldwell's men here. One of them—Shannon—was just recovering from variola. The other did not have the disease; was acting as nurse. He said Shannon was taken sick January 12th, having been exposed to McMurty, in Caldwell's camp.

One man had the disease here and died; name, West Stewart. Exposed to McMurty. Taken sick at Trout Lake, January 14th. Died January 28th. No one has stopped here since Stewart was taken sick. After leaving Trout Lake we met twelve of Caldwell's men going to Aitkin. They said they were going to leave the pineries on account of small pox. They represented Caldwell's crew in a very bad condition.

February 4th. We reached Fawcett's camp February 4th, afternoon Vaccinated all the crew here this evening.

February 5th. Went to Cameron's camp this morning. This is six miles north of Fawcett's. The crew numbered twenty-four. Ten men left the camp yesterday for fear of small pox, although no one had ever been exposed. I vaccinated the remaining fourteen, and they determined to remain. Thence we returned and visited Fawcett's other camp, two (2) miles from the first, and vaccinated twenty-eight men.

February 6th. Started this morning for Gusta & Watson's camp, on another branch of the Big Fork River, and about twenty-five miles from Fawcett's. Here are two camps, with a crew of about sixty men. The men were opposed to vaccination, but consented after considerable demur. I visited both camps in the afternoon, and vaccinated the entire crew.

February 7th. Left Gusta & Watson's camp at noon for Caldwell's, and arrived there Thursday evening, February 8th.

February 8th. The first camp we reached was used as a pest house. The camp has two rooms — a cook room and a sleeping room, furnished with bunks in the usual way. There is an alley between the two rooms, and the camp is all under one roof. There are four (4) men sick in bed, and two (2) convalescing. Seven (7) have died. They were seen by Dr. Van Cleve, then from Duluth, about three weeks ago, at which time the crew were all vaccinated. There is a small crew of about ten men working at this camp, and occupying the cook room. Strict quarantine is not maintained, however. I found the nurse visiting both rooms without using any precautions. I vaccinated those who needed it, and after establishing better quarantine, and leaving medicine for the sick men, I visited the upper camp. There was a small crew at this camp. They had all been vaccinated by Dr. Van Cleve. Two men sick in bed. Examined, and discovered they had varioloid. They were removed to the other camp with their bedding and clothing.

February 9th. After visiting the patients again this morning, and giving directions as to treatment, etc., departed for Grand Rapids, where I arrived Sunday evening, February 11th.

February 11th. Here I found three (3) new cases in the pest house, James Delaney from Cook's, Tom Smith from Fawcett's and Bradish from Caldwell's camp. Tom Smith was exposed to West Stewart at Trout Lake ranch; was sick before he left camp; came in the pest house on the ninth of February; varioloid. Delaney, exposed to Robinson at Cook's camp, came in pest house February 9th; confluent variola.

February 12th. Visited the pest house this morning. Delaney delirious. Then went to Hobart & Chattersden's camp on Bass Lake, and vaccinated ten men.

February 13th. Remained at Grand Rapids to-day. Visited the pest house with Dr. Belyea. Two new cases were admitted this afternoon. They came from Milligan & Leavitt's camp, twenty-two miles above Grand Rapids, on the Mississippi. Names, John Elligan and Frank Batley. They were exposed to Crosby, who had varioloid in camp and was exposed at Doyle's ranch. Both men were vaccinated, but without success.

February 14th. Decided to go to Brainerd and report to Dr. Rosser.

February 16th. Arrived in Brainerd. Met Drs. Hewitt and Rosser, and returned with them at once to Aitkin. Reported to Dr. Hewitt, and received instructions to visit the camps on the Big Fork River.

In the first place I went to Elk River to get my team, as it was difficult to get a conveyance in the woods. It took me from February 17th to February 23d to reach Grand Rapids.

February 23d. Found two (2) new cases in the pest house: Jerry Whitney, from Fawcett's camp, exposed to Tom Smith in camp; came in pest house February 21st, with confluent variola. Al. Hardison, from Fawcett's camp, exposed to Tom Smith; came in pest house February 23d; has varioloid.

February 24th. Started for Fawcett's camp on the Big Fork River.

February 25th. Arrived there February 25th, in the afternoon. The men were all well with one exception. He, Peter McPherson, had been sick several days with symptoms of small pox, vomiting, headache, backache, lachrymation, etc. Yesterday he noticed small papules on his face and some on his body. They are on his forehead, one on his nose and cheek, a few scattered on his back. They are as large as a split pea, hard and glistening. Those on the body have a slight areola like acine papules. There are several on his hands. Gave an opinion that it was varioloid and advised sending him to Grand Rapids and placing him in quarantine. My directions were not followed out.

February 26th and 27th. Stayed at this camp two days awaiting developments. The men were thoroughly vaccinated. I vaccinated those who needed it. The man McPherson improved but the papules became pustules and showed a tendency to scab. None of the papules were umbilicated. Notwithstanding the small size of the papules and the fact that they were not umbilicated, I could not dismiss the impression that it was a case of varioloid.

February 28th. Went to Gusta & Watson's camp to-day. No small pox there. They have rigidly excluded strangers and Caldwell's men.

March 1st. Arrived at Caldwell's this evening. The men are all well in the infected camp with one exception. Him I felt obliged to keep under observation. The men are in good spirits and are at work. The convalescents bathed and changed their clothes, putting on new clothing. I burned up all the old clothing and bedding and fumigated the sick room with burning sulphur. I then directed them how to fumigate the other room. Then set out for Fawcett's camp again.

March 3d, 4th and 5th. Arrived at Fawcett's this evening. I found no new cases here. One of my horses being lame I was obliged to remain until March 5th. Then, considering the danger over in this camp, I went again to Caldwell's to complete the fumigation.

March 6th. Arrived there Tuesday evening, March 6th. Men are all well. They have fumigated both rooms in the pest house. I again started a sulphur smudge and directed them to keep it up 48 hours.

March 7th, 8th and 9th. Took the road for Grand Rapids and reached here Friday, March 9th, at noon. Two (2) men have died in pest house during my absence, Whitney and Batley. Two (2) discharged, Elligan and Hayward. Three (3) remained; all doing well. There have been twelve (12) men in quarantine since the house opened. All were vaccinated. This afternoon I left for Aitkin where I arrived March 10th. On the way I visited Cook's camp on Split Hand River. Found the men all well. There have been twelve (12) cases of varioloid in this camp, which is under the care of Dr. Brackett, of Minneapolis. They claimed they had changed their clothes and that Dr. Brackett fumigated the camp. Did not see Dr. Brackett.

March 10th. Arrived in Aitkin. I remained until Sunday night, when I took the train for Brainerd.

March 12th. Meanwhile I had written to Dr. Hewitt, and awaited orders. Saw Dr. Rosser to-day and reported to him. He advised me to await telegram from Dr. Hewitt.

March 13th. Then went to Aitkin and drove my team to Brainerd.

March 14th. Received telegram from Dr. Hewitt summoning me to Red Wing, March 14th, and took the night train for St. Paul. Arrived in Red Wing, March 14th, in the afternoon. Here I made my report and was dismissed.

Very respectfully yours.
CHAS. Q. SCOBORIA, M. D.

Elk River, Minn., March 30, 1883.

REPORT OF SMALL POX AT GRAND RAPIDS, BY DR. E. H. BELYEA, HEALTH OFFICER, GRAND RAPIDS, MINN.

First case that presented itself was John Carney, who is supposed to have contracted disease at Minneapolis. Taken sick at

Trout Lake, twenty-five miles north of Grand Rapids, while on his way up to camp from Minneapolis. Never vaccinated. Saw case (December 15th) four days after the eruption had made its appearance. Vesicles large, confluent and umbilicated; some assuming the appearance of great water blebs. Third day after being placed in pest house diarrhœa set in which was uncontrollable by astringents. Instead of the scab formation, the whole surface of the skin seemed to separate and leave one raw, bleeding surface beneath. There was not much delirium throughout, but the general symptoms became gradually aggravated till his death, December 25th. In the meantime I had secured a quantity of vaccine virus from the State Board of Health, and Dr. Griffin, Wisconsin, and later on will give an account of some of the cases vaccinated, etc.

Second Case. Edmund Porter. Exposed to disease from Carney. First sick December 30th, with the usual premonitory symptoms. In spite of treatment and nursing died thirteenth day of disease.

Third and fourth cases were those of Mrs. Doyle (squaw) and son, aged seven years, who had been exposed to Porter before being quarantined.

First visit found premonitory symptoms of variola, but no eruption. Both had been vaccinated four days before and virus had just commenced to work on the boy. Visited cases in the morning. Eruption commencing to appear on the boy. Fine rash all over the body. Symptoms of woman same as before; violent headache and still vomiting bad. Visited cases next morning. Vesicles commencing to form on boy. Rash fully established on woman, with a subsidence of first symptoms. From onset the boy's case seemed to run a mild course, although of confluent variety, vaccination working in advance of the disease. Vesication was quickly followed by formation of scab, which dried up and scaled off, leaving the skin almost without a pit.

Vaccination not working on the mother, the case ran a course similar to that of Nos. 1 and 2, complicated with menorrhagia, retention of urine and delirium. Case terminated fatally January 28th, fifteenth day of disease.

The fifth case was that of Henry Haywood. Exposed to disease from Porter. Period of incubation, twenty-one days (the only case that run over fourteen days). Saw him before eruptive stage (January 27th) had manifested itself. Usual premonitory symptoms present. Vaccinated immediately and removed him to quarantine, which was subsequently turned into a pest house.

Third day after commencement of sickness the rash began to appear at the roots of the hair and gradually extending over the body, reaching the vesicular stage about the seventh day. Confluent variety. First few days after the eruption had reached its height, there was some delirium, which soon subsided, leaving patient quite comfortable. Itching and irritation allayed with cosmoline carbolized, which was freely used by the nurse on every part of the body. Case ran a favorable course throughout. Vaccination tried at commencement working with the disease. Discharged on forty-first day.

Sixth case, varioloid—James Bradish. Contracted disease at Trout Lake. Had been vaccinated four years ago. Premonitory symptoms, same as in variola. Some five or six vesicles made their appearance on the face and a few on the body, which soon dried up, and scabs scaled off. Discharged, twentieth day.

Thos. Smith was the seventh case. Exposed at Trout Lake. Was immediately vaccinated on his arrival at the Rapids. Commenced to work on the arm the third day. Arm badly swollen and painful. Unable to work or use the arm. On the fourteenth day after exposure, three or four vesicles made their appearance on the face but none on the body. Ordered him to pest house. Up around all the time. Discharged, eighteenth day.

Eighth case. James Delaney was sent to pest house from Cook Bros. Split Hand camp, by Dr. Brackett, February 10th. Case fully established. Rash abundant all over body, vesicles commencing to form. Confluent variety. Had just been vaccinated previous to exposure, but did not seem to work. On the same evening of confinement he became violently delirious and required to be held on the bed. Refused nourishment and medicine, spitting it out when administered. Delirium lasted for three days, when he became unconscious and remained in a comatose state till his death, which occured on the fifth day after being placed in pest house.

This was one of the most rapidly fatal cases under my charge, and I presume to say that, from exposure to cold during his conveyance to pest-house, some ten miles, and the disease centering to the brain, caused fatal brain complications.

Ninth Case, John Elligan. Exposed to disease at Doyle's. Vaccinated shortly after exposure. Had been vaccinated when young. Sent to pest house February 13th. Vesicles abundant on every part of the body, assuming the appearance of confluent varioloid. On fifth day of disease the vesicles commenced to dry up and scabs form. No bad symptoms. Patient was up around the house most of the time. Was discharged on the twenty-fourth day. This I regard as a marked case of varioloid symptoms well controlled and aborted by the timely effects of vaccination.

Tenth Case, Henry Bergen. Brought to pest house with Elligan. Disease ran a different course however. Never vaccinated. Vesicles fully established on the seventh day with large water blebs on different parts of the body. Great itching and irritation of the surface, allayed in part by cosmoline and sweet oil, also used oiled muslin. Symptoms became greatly intensified as disease progressed. Integument separated from soft tissue and left one raw bleeding surface which greatly annoyed patient. Case terminated fatally on the sixteenth day of confinement after suffering intense pain from the effects of the raw, denuded surface which could only partially be protected.

Eleventh case, Jerry Whitney. Taken sick February 21st. Exposed to disease from Tom Smith while bringing him to pest-house from Fawcett's camp. Saw him before eruption had appeared. Had been vaccinated some weeks before but did not take effect. Violent head and back ache almost bordering on delirium. Great nausea and vomiting with rapid pulse. Eruption appeared on the third day. Had him removed to pest house. Seventh day vesicles well established, confluent variety. Large water blotches on different parts of the body. Patient very irritable, nervous and at times delirious, taking nourishment and medicine as it suited him. Used cosmoline and oil to prevent itching, but could not prevent his scratching. Symptoms gradually grew worse. Refused all nourishment. Died tenth day of disease.

Twelfth case. Al. Hardison. Contracted disease at Fawcett's camp. Was not sent to pest house till fifth day of eruption. Vesicles rapidly forming. Never been vaccinated. Treated case as before with tonics, diuretics and cathartics, using cosmoline and olive oil carbolized in conjunction with oiled muslin to allay itching and irritation. Confluent variety. Vesicle formed on the pupil of right eye, which caused perforation and sloughing of the whole eye substance. Convalescence very slow and tedious owing to the great abundance of boils on the body, which followed the scab. Gave patient *syr. ferri iod.* as an alterative, which gradually cleared up the system. Discharged on the fifty-second day.

Thirteenth case — Jas. Conklin. Varioloid. Exposed to Hardison, at Fawcett's camp. A few vesicles on different parts of the body. Discharged on the tenth day.

Fourteenth case — George Anderson. March 14th placed in pest house. Had never been vaccinated and would not submit to operation. Prepared system at onset; confluent variety; no bad symptoms throughout sickness. Discharged twenty-eighth day.

Fifteenth case was Thos. Welsh, from Fawcett's camp. Had delirium tremens while in quarantine; had been a hard drinker previous to his sickness. Placed in pest house March 14th. Never vaccinated till placed in quarantine, as he refused to be. Rash confluent variety. Delirious when placed in pest house and gradually grew worse. Refused all nourishment and medicine. Died on the eleventh day.

This includes the number of cases under my charge during the epidemic,—twelve (12) cases variola and three varioloid. Most cases were men of middle life, ranging from twenty-eight to forty-five years of age. Number of deaths, seven (7). Those that were fatal had not been vaccinated, *i. e.*, vaccination never working.

Too great stress, therefore, cannot be placed upon vaccination. Inability to secure pure and reliable virus immediately, and the refusal of many of the lumbermen to allow the physician to visit their camps and vaccinate, and the poor accommodations of quarantine and pest house, greatly retarded the work of putting an end to the epidemic.

Vaccinated some four hundred in all, and had an opportunity to watch its effects on many. Used the ivory points prepared by Dr. Griffin, but could not rely on its working in every case. Finally I came to use them more freely,—at least two points on each scarification,—and with better results. If the virus could be prepared in such a way as not to be destroyed in part or whole by the action of the air the results would be better by far.

The dried up virus has undergone a change, in my opinion affecting the patient as though it were some violent blood poison, rather than a mild preventative for variola. If the virus could be distributed as it is taken from the heifer, the effects and results no doubt would be more satisfactory. The great drawback was in a great many instances of primary vaccination, the person was incapacitated from work for from one to six weeks, thereby leading many to believe that they might as well run their chances on taking the small pox, as to be laid up for so long a time and suffer more than with the original disease. Hence the reason for the work not being done thoroughly at the outset of the epidemic. Will now attempt to cite you a few of the parallel cases, of the mode and effects of vaccination.

James B., cook by trade, vaccinated Dec. 28th, using every point obtained from State Board of Health, (Griffin's). Scarified with point itself, two places size of half a dime, barely starting blood. On fifth day virus commenced to work, vesicles forming nicely. Seventh day arm badly swollen around the sore and in the axillary glands; scab commencing to form, but looking black and unhealthy; high fever with chills, nausea and vomiting. Ninth day, arm very badly swollen and inflamed from point of shoulder extending to below the elbow; unable to bend the arm or use it in any way. Fourteenth day the ulcer was size of silver dollar, with a deep seated scab, simulating gangrene in appearance. Three weeks before patient was able to work. When pain and inflammation were bad, used hot poultices, alternating with ointment of cosmoline, to sore.

Second case — Sandy C. vaccinated with point in two places on arm, inch apart. Fourth or fifth day commenced to work on both *places*. Eighth day, vesicle well *formed*; arm badly swollen from wrist to point of shoulder; chills, fever with nausea and vomiting. Saw case about tenth day after vaccination; the two points of vaccination had run together, forming one large, rodent ulcer, size of three silver dollars; patient weak and feverish; axillary glands badly swollen and inflamed, presenting the appearance of an abscess; examined and found pus; opened gland which discharged freely a thick yellowish and bloody pus; applied poultices and cosmoline with quinine and tonics. Patient around and at work in five weeks.

It was impossibie for me to secure much reliable humanized virus, as all of the children were half breeds, and the taints of syphilis were too marked in the majority of these, as well as the men, that I did not deem it safe to use many of the scabs.

Henry Olson, Swede, vaccinated in two places on arm with scab. Vesicle commenced to form third day. Fully formed on the seventh. Surrounding tissue of sore very hard and inflamed. Patient unable to raise arm to the head. Temperature 104 F., pulse 120. Nausea and vomiting marked. In fact, all the premonitory symptoms of variola. About fourteenth day, scab was accidentally knocked off, and left a large, unhealthy, deep-seated ulcer, almost reaching the *bone beneath.* Patient not able to work for four weeks.

These are examples of a few of the many cases that came under my notice, and had it not been for the fearful dread of the small pox itself, but few of the lumbermen would have submitted to the operation. I did not keep an accurate account of the severe cases, but would say that on an average fifty per cent of all the cases that had been vaccinated for the first time presented cases similar to those that I have just cited. Quinine in large doses to reduce temperature, emollient poultices, as flax seed and slippery elm, seemed to allay in a great measure the pain and inflammation. A simple dressing of cosmoline to the ulcer would generally correct its unhealthy appearance and start the healing process. I could cite you many other cases of the results of vaccination in the adults which tend to prove that either the virus itself was somewhat at fault, or that the process of vaccination was of greater intensity than we were led to believe by those who had operated among and written on the actions and effects of the virus. I would strongly advocate compulsory vaccination, however, in every State, and among the children especially, for in the few cases that I have had an opportunity to watch among them there was not a bad symptom, the vesicle and scab forming in natural order, without giving any uneasiness whatever to the child.

Respectfully,

E. H. Belyea, M. D.,
Health Officer in Charge,
Grand Rapids, Minn.

LAKE WINNIBIGOSHISH OUTBREAK.

SUMMARY SMALL POX AMONG THE INDIANS.

First report written Feb. 11, 1883, by Mr. Wanzer, Lake Winnibigoshish, received through Dr. Hand and Maj. Allen by secretary, Feb. 21, 1883.

Thirty-three deaths reported.

No new cases.

Mr. Wanzer writes under date February 16th:

"Indians dying across river with mysterious disease; die suddenly, before small pox has time to development itself. Two new deaths reported."

March 5th, Dr. Rosser writes:

"Visited Lake Winnibigoshish as ordered; arrived February 27th; visited Dr. Walker in charge. Disease first appeared January 19th; origin, Caldwell's camp.

Number of cases, twenty-five; number of deaths, twenty-five; in quarantine, eight.

August 16th, Dr. Walker furnished this report:

"Origin of infection—

I. January 4th, four Indians on Bow String contracted small pox from some lumbermen, who stopped in their camp while sick with the disease.

II. January 14th. Indians contracted disease at Caldwell's camp. From these two exposures disease spread to Round Lake, Sand Lake, and reached Lake Winnibigoshish January 27th. Not a wigwam spared.

February 2d. Established two quarantine stations—quarantined all exposed.

Last case, died February 27th.

Visited by Doctors Ashley Thompson and Rosser, February 27th.

Quarantine raised, May 14th, seventy-six days after last case (in charge Dr. Thompson).

August 11th, rumor of another outbreak among Indians.

Dr. Rosser sent to Duluth to investigate.

August 14th, Dr. Rosser reported:

"Went to Duluth; Dr. Smith absent. Parties who started rumor, "cruisers," had found dead bodies in woods; learned from general council of Chippewas, all represented, no small pox among them.

Under date Jan. 23, 1883, Dr. Belyea wrote from Grand Rapids: "Dr. Van Cleve gone to Duluth. Notify government doctor at Leach Lake and Government Dam respecting the Indians coming from the wigwams near Caldwell's camp."

Under date Feb. 15, 1883, secretary telegraphed Dr. Rosser: "Get facts as to variola among Indians; answer immediately."

Same date Dr. Rosser telegraphed: "A few Indians on the Big Forks have the small pox. It is not general among them, so I am informed by Indians."

Under date February 21st, Dr. Hand writes from St. Paul, en-closing correspondence through government engineer, Maj. Allen, from Lake Winnibigoshish, written under date February 11th: "Asking for clothing for the Bow String Indians, as they destroy that which has been infected with small pox. Have been thirty-three deaths reported. No new cases here. Vaccine received and all vaccinated."

Under date February 16th, Mr. Wanzer again writes: "Indians across the river dying with some mysterious disease. Doctor does not know what it is. In most cases they are taken sick, and before small pox (if that it is) can appear, they are dead. The doctor yesterday found Black Hawk and one child sick in the same wigwam; neither too sick to walk around. This morning both dead. Fear there is something about it he doesn't understand. It is barely possible the Indians are killing their sick; if so in this case, why have they not in others. Please make arrangements to send another doctor to assist Dr. Walker."

Dr. Hand and Maj. Allen saw the governor, to whom they suggested, as the proper thing, to telegraph Dr. Rosser, Brainerd, to go there at once with Mr. Wanzer. Governor also asked Dr. Hand to see Gov. Sibley about getting clothing contributions for the Indians. Governor also instructed secretary of State Board to correspond immediately with the Indian Bureau about this business.

Under date February 22d secretary wrote to superintendent Indian Bureau: "Am directed by governor to call your attention to enclosed copies of letters, and to ask immediate attention thereto. The Indians caught the small pox from a camp of lumbermen near the Canadian boundary in this State, above Aitkin. What they need is: First, a competent and fearless physician; second, a supply of new clothing. This board have sent a physician to inquire into the danger to our people. We look to you to care for the Indians, but we will co-operate in every way we can."

Copies of the above letters were submitted to Hon. H. B. Strait, member of Congress, First District, with request that he hasten the action of the Indian Bureau.

Under date February 27th, comissioner Indian affairs replies: "Agent Luce, of White Earth Agency, has been authorized by telegram to purchase blankets, materials and supplies for the Pillagers of Leach Lake. The matter of appointing a competent physician and nurses, and the designation of a building at the reservation to be used as a pest house, will receive immediate attention. Every measure taken within the power of this office to prevent the spread of disease or of contagion among the Indians."

March 2d a copy of this letter was submitted to the Governor.

Under date March 5th, superintendent Indian affairs again writes:

"Much regret that funds at my disposal will not permit me to furnish any extra medical service. There is a physician at White Earth and at Red Lake. The agent has been instructed to do the best he can. New clothing, blankets, etc., furnished to all cases occuring at the Indian agencies."

Under date March 5th Dr. Rosser writes Dr. Hand, president of this board:

"As ordered, I visited Lake Winnibigoshish, with Capt. Wanzer, on February 27th. Immediately visited Dr. J. A. Walker, in charge of all exposed or sick from small pox. The disease first appeared about January 19th. Indians infected by Caldwell's men conveyed the disease to Bow String and thence to Lake Winnibigoshish, where Dr. Walker met and for first time called it small pox, the Indians believing it measles. As the Indians straggled in from Bow String Dr. Walker vaccinated and quarantined them. Twenty-five infected and twent-five died, many before the eruption. Eight Indians now in quarantine near government works on east side of Mississippi River, fed by Capt. Wanzer, under Dr. Walker's direction; and from length of time since exposure I think they will escape. Every precaution is being taken; no trouble to be apprehended. Indians submissive. I suggest to friends of Indians to insist that Interior Department send competent man to go to Bow String and Rainy Lake Rivers and make the necessary provisions for the Indians there. The white man is safe here as respects small pox; but unless the Indians are provided for it is hard to tell where this epidemic will end."

Under date March 1, 1883, Dr. J. A. Walker reports from Lake Winnibigoshish to Dr. Rosser:

"Since January 19th there have occurred about this lake twenty-five cases of small pox, of whom twenty-four died. There are no cases here now, and but eight persons in quarantine. No small pox among the government employes. All persons will be closely watched, and if any new cases develop they will be promptly cared for."

Inclosing the letter Dr. Rosser says: "But for Dr. Walker, Leech Lake, Cass Lake, and probably White Earth, would have been infected."

March 28th, secretary reported to the governor:

"Everything going on well; little danger to be expected from that source."

Under date April 13th, Maj. Allen, in charge of government works at Lake Winnibigosish and Leach Lakes, writes from St. Paul to secretary.

"Indians exposed to small pox last winter are roaming around the country wearing infected clothing, and carrying old blankets. Gov. Hubbard informed me a few days ago that the Indian Bureau had the necessary authority to replace this clothing, which was to be burned. I am informed that the agent is somewhat cramped for funds and facilities; he will do all he can. We quarantined our camps and vaccinated our men last winter. Dr. Walker is our physician, for whites and Indians not belonging to our party alike. Of course he has helped the northern part of the State to some extent while keeping our camp free from the scourge. We were greatly aided by the Governor and yourself in sending Dr. Rosser to confer with our physician, and I take this opportunity to make my acknowledgements to you. A few Indians wandering around the country in infected clothing may give the disease another start."

April 14th, Secretary telegraphed the Secretary of Interior, Washinton, D. C.: "Maj. Allen, in charge of government works in northern Minnesota, reports, 'that Indians exposed to small pox there are wandering around the country.' The Governor instructs me to telegraph this report to you, and to ask that a competent person be instructed, with full powers to act promptly in this matter. Please answer."

Next day, H. Price, Commissioner of Indian Affairs, replied:

"Agent authorized by telegraph some days since to purchase clothing. Physician is there."

Under date April 14th, secretary of this board acknowledged receipt of Maj. Allen's letter, informing him of the action taken by this board under Governor's direction, and asking for any further information which he may be able to communicate.

Under date Aug. 16, 1883, Dr. Walker, government physician at Lake Winnibigoshish, kindly furnished to the Secretary of State Board of Health a copy of his report of this epidemic to the Interior Department. He states:

"About Jan. 6. 1883, four Indians living on Bow String Lake contracted small pox from some lumbermen who stopped in their camp for some time while sick with the disease. About January

14th, some Indians living near Caldwell's lumber camp on Big Fork River, contracted the disease from lumbermen there. From these two exposures the disease spread to Round Lake, Tard Lake, and Lake Winnibigoshish, the latter place January 27th, and had not spared a wigwam or family in the territory over which it had passed. The physician who had been sent to Caldwell's camp refused to do anything for the Indians, though much nearer to them than I was. Fearing the spread of the disease to Leech Lake, White Oak Point and Grand Rapids to the citizens of Minnesota, I took charge of the epidemic on Feb. 2, 1883, and established two quarantine houses, into which I gathered all who had been exposed to the contagion. Not a case occurred among the Indians after the quarantine had been established; last case died February 27th. In the evening, Dr. Ashley Thompson, sent by the Department of Indian Affairs, and Dr. J. C. Rosser, sent by governor of Minnesota, arrived at Lake Winnibigoshish, making the first offer of help, and after the epidemic had ended. Dr. Thompson next day took charge of the Indians in quarantine, and kept them there until May 14th, seventy-six days after the last case had occurred. He then disinfected them by destroying by fire every article of property they possessed, which would burn, except their canoes, and by giving to each a new suit of clothes and a blanket." [For vaccinal statistics see his report of same date.]

SECOND OUTBREAK.

August 11, 1883, rumors reach the office of the State Board that small pox had again broken out among the Indians in Itasca County.

Secretary telegraphed Dr. Rosser, Brainerd: "Go to Duluth and consult with Dr. Smith as regards variola among Indians in Itasca County. Answer."

On Aug. 14th Dr. Rosser replied: "Went to Duluth. Dr. Smith absent. Found the party from whom the report regarding variola in Itasca County among Indians had originated. These men had been "cruising," as they call it, running out the section lines in T. 58 N., R. 26, Sec. 9, Itasca County, and found the bodies of several Indians who probably perished with variola last winter. I ascertained from the Indians at their general council held several weeks since at Leech Lake, where were represented all the bands of Chippewas in the State, that variola did not exist among them. They informed me that on the Bow String they simply burned the wigwams over their dead, and this was not sufficient to consume the bodies. Dr. Smith returned before I left, and advised that the Indian agent have those bodies buried."

Secretary, under date of August 14th, informed the governor of above facts, and also wrote a letter to editor of *PioneerPress.*

August 15th, secretary wrote again to Dr. Rosser, calling his attention to an item in newspapers stating that an Indian at Government Dam had proposed to kill a squaw having the small pox. "Please inquire particularly about it."

To which Dr. Rosser answered, August 17th: "I received yours of fifteenth yesterday. An Indian just from there informs me that they have had no small pox since last winter."

REPORT BY DR. WALKER OF THE OUTBREAK OF SMALL POX AMONG THE INDIANS AT LAKE WINNIBIGOSHISH.

Lake Winnibigoshish, Minn.,
August 16, 1883.

Dr. C. N. Hewitt, Secretary State Board of Health, Red Wing, Minn.

Sir: In compliance with my promise I send you the inclosed, which is an epitome of a report of the epidemic of small pox that existed among the Winnebigoshish Chippewa Indians during January and February, 1883, made by me for the Department of Indian Affairs, and only recently completed.

There had elapsed some time since the epidemic before I could satisfactorily complete my report, as I desired to verify my notes by the testimony of the surviving Indians, and collect a few facts that escaped me during the prevalence of the disease.

As the most of these Indians live a day or two days' journey from where I am living, and as that journey is by canoe or trail only, I did not care to lose the time and labor necessary for going especially to see these people, so I awaited until chance threw them into my way.

Hoping this hastily written report may suit you, I am,

Respectfully yours,

Jas. R. Walker, M. D.

About Jan. 6, 1883, four Indians living on Bow String Lake, Minnesota, were attacked with the small pox, which they had contracted from a lumberman, who had stopped for a short time in their wigwam, while sick with that disease.

About January 14th, some Indians living near Caldwell's lumber camp on the Big Fork river, were attacked with the same disease, which they contracted at that place.

From these two points the disease spread to Round Lake, Sand Lake, and Lake Winnibegoshish, arriving at the latter place January 27th, at which time it had not spared a wigwam or family in the territory over which it had passed.

The physicians who had been sent to Caldwell's camp had refused to do anything for the Indians, though much nearer to them than I was, and I perceived that long before I could have communication with anyone having authority to do anything in the matter, the disease would, unless checked, doubtless spread to Leech Lake, White Oak Point and Grand Rapids, and from there be a seriously threatening danger to the citizens of Minnesota.

For these reasons I determined to take charge of the epidemic, which I did Feb. 2, 1883, and succeeded, after undergoing great hardship and no little danger in traveling through pathless wildernesses on snow shoes, and laying out at night during bitter, cold weather, in establishing a quarantine house and two pest houses, into which I gathered all who had been exposed to contagion; and so well was my quarantine maintained that not a case of small pox occurred outside of it after it was established.

All this I did without the help of anyone, whatever, except that given by the Indians who were under quarantine.

Nor did I receive any help from anyone during the prevalence of the epidemic, except that the government overseer at Leech Lake, who had charge of these Indians, sent me six hundred pounds of flour, one hundred and fifty pounds of pork and a little sugar, and tea and some medicine.

The last case of the epidemic died Feb. 27, 1883, on the evening of which day Dr. Ashley Thompson, sent by the Department of Indian Affairs, and Dr. J. C. Rosser, sent by the Governor of Minnesota, arrived at Lake Winnibigoshish, and I received my first offer of help after the epidemic had ended.

On February 28th, Dr. Thompson took charge of the Indians who were under quarantine, where he kept them until May 14th, seventy-six days after the last case occurred among them. He then proceeded to disinfect them, by destroying by fire every article of property they possessed that would burn, except their canoes, and by giving to each a new suit of clothing and a blanket.

The following tables give the statistical facts of the epidemic, as compiled by notes kept by me and verified by patient investigation, and are, I think, reliable.

A table I have prepared of those who have been vaccinated at some time previous to the epidemic and were exposed, with the final result, I do not send, because it is not satisfactorily verified.

The average time in which the unassisted scale fell in 12 of these cases was about 17 days; the longest being 22, and the shortest 14 days.

In 108 of those vaccinated with animal virus, the vesicle appeared on an average of 9 days, the longest being 14, and the shortest 7 days (except 3 of those who had been exposed to contagion, one of whom showed the vesicle in 3, and two of them in 4 days, all having the small pox developed in them during the vesicular stage of the vacine.)

The average time for the falling of the scales in 72 of these cases was about 26 days; the longest being 36, and the shortest 17 days.

Ten were attacked with the small pox when they had apparently good and characteristic scales on their arms.

The cases during the epidemic were generally of the confluent type, where the patient lived long enough for the disease to develop its characteristics.

The average duration of 42 fatal cases was 4½ days; of these the longest was 10½ days and the shortest 36 hours.

There were 6 cases of varioloid, all of which recovered, lasting on an average 14 days, the longest being 22 and the shortest 10 days.

Six cases of discrete small pox recovered, with an average duration of 19 days.

All the cases of varioloid and two of the cases of variola that recovered had been vaccinated previous to the epidemic.

Of the 21 who were exposed to contagion and escaped an attack 6 had primary syphilis, 2 had chancroid, and 5 show strong syphilitic taint.

The epidemic was preceded by an epidemic of measles, which prevailed quite generally, but without a fatal case. It was also preceded and accompanied by an epidemic of varicilla or chicken pox, and by a strange *malarious and sweating fever* of peculiar and strongly marked characteristics.

Frequent opportunities were offered of proving no mistake in diagnosis, for the two latter prevailed among those afflicted with the small pox as well as others.

JAS. R. WALKER, M. D.,
Government Physician,
At Lake Winnibigoshish.

SMALL POX IN MINNEAPOLIS.

REPORTS OF HEALTH OFFICER.

Under date February 9th Dr. J. C. Cockburn, health officer, reports:

"So far as our native or city-born cases go, we have three cases small pox in close quarters, everything closely followed up; but during the past four days, have found five cases who have come from the pineries above Aitkin, three in hospital, one quarantined in city and one outside the city limits at his own home. Lumbermen inform me that it is very difficult to keep the men in the pineries which they are leaving by snow-shoeing across the woods to the railroad above or below Aitkin, to Duluth or Brainerd, where they are not prevented from taking the train and going where they please. I fear for the upper part of the State rather than for the city. One of our lumbermen suggests that Duluth Junction and Brainerd be made points of quarantine in addition to Aitkin." On the twelfth of February he reported: "Five at pest house, three of whom from up river. Two quarantined at St. Anthony from up river. Two quarantined at home in Minneapolis."

Secretary replied: "Have ordered quarantine at Duluth Junction and it is reported thoroughly done at Aitkin and Brainerd, and also on the cars by the employees of the N. P. R. R."

Secretary notified the chairman of board of supervisors of Townships St. Anthony, Crystal Lake and Minneapolis to look out for small pox coming from lumber camps up river and to notify and co-operate with health officer of Minneapolis.

During March careful oversight was maintained by Dr. Rosser and his associates over infected camps and men coming therefrom.

March 22d, secretary wrote to health officer Minneapolis, notifying him of the outbreak of small pox on the North Wis. R. R., in North Wisconsin, and that in the lumber camps in Minnesota there were but five cases of varioloid and all the camps except Cook's well cared for and steps taken to care for that.

In reply, March 24th, Health Officer Dr. Cockburn wrote:

"We have now six cases in hospital in full bloom, four nearly recovered, and seven in quarantine—all can be traced to up-river. Some coercion may have to be used with the Cooks as respects their camp and outfit. I saw one of them yesterday; he is not disposed to destroy their heavy woolen camp blankets and is reluctant to destroy the old camp. Explained to him the absolute necessity for doing so; said he would destroy the camp but himself clean the bedding during the summer. This I believe to be risky business. Do not know that we can do more in preventing the men coming on the train than to depend on the vigilance of the people reporting."

March 24th, secretary replied:

"Please direct Dr. Brown, small pox physician, to get the names, camps, and dates of departure of the men whom you now have in hospital or quarantine, from camps up-river or any others whom you heretofore received. This record tracing the responsibility where it belongs, is very necessary for me in dealing with up-country matters. Dr. Rosser went to Aitkin to take additional precaution for the men coming out of the woods, and to look after infected camps. Have to-day telegraphed him your report as to Cook. Doctors Merrill and Clark, of Stillwater, went up on N. Wis. R. R. yesterday, vaccinating and disinfecting.

March 26th, Dr. Brown, quarantine physician of Minneapolis, reported. (Report attached).

April 8th, secretary telegraphed health officer, Minneapolis: "Notify all lumber firms not to send unvaccinated men on the drive."

April 9th, health officer wrote complaining of condition of Cook's camp.

April 12th, secretary replied, giving full details of the steps which had been taken respecting that camp.

April 15th, Dr. Cockburn writes again, complaining of condition of Cook's camp, and asks that a competent man go and prevent the clothing and bedding being used.

April 21st, secretary replied: "Forwarded your letter to Dr. Rosser and asked him to go to Cook's camp and look after matter of clothing and bedding. Suppose you know the fatal case at Maple Plain came from Minneapolis, and all the up river cases originated there."

DR. BROWN'S REPORT ON SMALL POX IN MINNEAPOLIS, FROM JAN. 14TH TO MAY 20th, 1883.

629 Washington ave. South,
Minneapolis, Minn., June 8, 1883.

Charles N. Hewitt, M. D., Secretary State Board of Health,

Dear Doctor: Following you will please find a brief account of the cases of small pox which have been under my care since my appointment as quarantine physician, Jan. 14, 1883. I found the following persons, all convalescing from the disease, in the small pox wards of the quarantine hospital: Willie Henderson, Willie Ficken and Baby Aholt, who had contracted the disease at the house and saloon of Mr. Ficken on Plymouth Avenue, the source of the contagion from which other cases had occurred there being unknown; Mrs. James Jordan, with three sons and one daughter (five sons and one daughter having died), and the source of the contagion having been the above saloon. Michael Jordan, just convalescent from severe confluent variola, was coming down with erysipelas of the head and face, from which he came near dying.

I also found in the ward Mrs. Herbert Folsom and her babe aged seven months, both of whom had been exposed during the illness of Mrs. James Slorah, who had died, according to the report of my predecessors, of confluent variola. At my first visit, the child presented a scattered bright red eruption, which had faded on the following day and was succeeded by a papular eruption resembling strophulus. Pneumonia supervened and the child died January 21st. Had the mother carried out my directions in good faith, the result might have been otherwise. I made an autopsy, which revealed no other cause of death than a double pneumonia.

January 15th, Mrs. Folsom, having had very slight constitutional disturbance, was covered with a dark red eruption resembling that of measles. This rapidly faded, and at a later day two suspicious pustules appeared, which were probably variolous. Mrs. Folsom was discharged January 24th.

At 1717 Washington Avenue North I found Fred, son of Octave Precourt, with discrete variola, having been ill nine days. He had contracted the disease while painting the addition to the quarantine hospital. He was discharged in due time. Other cases occurred in the family as follows: Henry became ill January 23rd. Was removed to hospital the 27th with a red eruption just appearing. I had not seen him till that day for a week or thereabouts. The eruption was semi-confluent. January 31st, there was a violent delirium. Owing to a carbuncle on his neck, a crop of boils, etc., he was not discharged till March 13th. Mary, 2 years, ill January 29th. Eruption appeared the 30th. on which day she and the rest of the family were removed to hospital. Though discrete the eruption was very profuse and the child seemed overwhelmed by the disease. The eruption did not mature well and the child died February 10th, having been in a stupor for some days. The babe became ill the 30th of January and developed a slight eruption, but was not seriously ill. Discharged February 20th. The last three cases were repeatedly vaccinated but without apparent result except in the case of the babe where the disease was modified. Mr. Precourt had previously had variola. Mrs. Precourt was vaccinated without result and failed to contract the disease.

January 19th, a practitioner reported a case of variola in the family of James Rice, at 616 South Seventh Street. I called at once and found Zula, 6 years old, child of John McCullum, ill since January 12th, the eruption well developed and pustular, discrete. Never vaccinated. Discharged February 20th, the house being quarantined till that date. The mother, Mrs. McCullum, had been ill since January 13th Eruption of varioloid had appeared the 18th. The following morning I found she had developed convulsions, which proved to be uremic. She did not respond to treatment and died in a convulsion January 21st, at 2 A. M. January 24th; Mrs. Rice, the mother of Mrs. McCullum, developed three non-umbilicated pocks, having had slight pains without other constitutional symptoms for three or four days. The origin of these cases is supposed to be as follows: January 5th, the head of this family, James Rice, became ill. After a few days fever "a hard, dry sore," non-pustular eruption appeared, which the above mentioned practitioner ascribed to "blood poison," and treated as such for a week or thereabouts, the patient calling daily at his office. For the week previous to being quarantined Mr. Rice had been about the streets as usual. At my first call he showed me the remains of what must have been a varioloid eruption and should have been recognized as such. Up to January 18th the intelligent family physician had been treating Mrs. McCullum and her child for *German measles*, and it may be doubted if the true condition of things would even then have been discovered had not John McCullum, the husband of Mrs. McCullum, returned home and suggested that the disease was probably small pox. During the illness of the family, the mother of Mrs. Rice, Mrs. Catherine Newel, from Finchford, Iowa, visited them and after being thoroughly exposed returned to her home in ignorance of the danger. She became ill later with small pox and before it was recognized others were exposed so that an outbreak of thirteen cases occurred with three deaths. The departure of Mrs. Newel occurred some days before the cases were reported to the health officer.

January 22d, John Garvey, twenty-four years old, a railway track layer, was reported as ill with variola at the Avenue House, 206 Washington Avenue South. He had been at the house for some weeks and knew of no exposure. He had been ill four days, presented a well marked papular eruption, and was at once removed to the hospital. It was a typical case of discrete variola. He was discharged March 12th.

January 24th, William Bobo, 266 Twenty-second Avenue South, a teamster was found to have varioloid and at once removed to the hospital. He had been at Cook Bros., Prairie Lake camp, teaming, having left there for home January 17th via Cook's Split Hand camp and Aitkin. He was discharged February 7th.

February 5th, Miss Etta Ames, living at the house of I. D. Petrie, 2,529 Second Avenue South, was reported ill of small pox. She was found to have been ill ten days. She had been attending Archibal's Business College and knew of no possible exposure. The eruption was a week old and distinctly pustular, discrete, non-umbilicated. The eruption was profuse, but the constitutional symptoms were so slight that the attending physician had mistaken the case for varicella, and it was only when others became ill in the family that quarantine was tolerated with equanimity.

February 9th, Mrs. Petrie and two little girls became ill. Mrs. Petrie had varioloid, one girl discrete variola, the other semi-confluent in a severe but uncomplicated form. All recovered and were discharged March 19th.

February 5th, John Ragan, ill with varioloid since the 2d, was reported to health officer and at once removed from 106 Fifth Avenue North to hospital. Discharged February 22d. He had been keeping the "ranch" at "Trout Lake Shanty," where the first case of small pox occurred up river, which case himself and wife had nursed.

February 8th, Charles A. Taylor was removed from his home at 516 University Avenue northeast to the hospital, ill since the 4th. Had arrived home January 31st from Aitkin, where he had spent a week, having been "toting" from there. Malignant, confluent variola, with severe pharyngo-laryngitis developed, and he died February 17th.

February 22d, Mrs. Perry was removed from 307 Sixth Street south to the hospital, having been ill about five days, vesicles being well developed. It was a mild case of discrete variola, recovered and was discharged. About two weeks previous to Mrs. Perry's illness Mr. Perry had a slight illness which confined him to the house for a few days, in which a slight eruption was developed, but the case was not considered of a dangerous character till Mrs. Perry became ill. It had undoubtedly been varioloid. No other cases occurred in the house.

February 23d, Thomas H. Monahan was removed from the health office, of which he was clerk, to the hospital.

March 6th, John Ingle, ill since the 3d, was removed to hospital from 407 First Street North. The case was severe, but uncomplicated, discrete variola. Discharged April 26th.

March 8th, George Barton was removed from same house to hospital, the eruption appearing very tardily and irregularly, he having been ill since the 3d. The case was malignant from the outset, there being a profuse but ill developed eruption. The eyes were bloodshot, the pocks purpuric, and the tongue black. He had profuse diarrhœa and died in convulsions (quite probably uremic) March 13th.

March 11th, Robert Watson was removed from College hospital, where he was being treated for a fractured tibia, to the hospital. He had been ill since the 9th. Had been a boarder at same house with last two cases, and had left when the house was closed, March 6th. The case, which was discrete variola, was complicated with severe glossitis and profuse diarrhœa, and terminated fatally March 18th. The only probable source from which these three cases can be traced is the following; About February 18th, John Peterson, a teamster in the employ of Mr. M. Gillan, came to 407 First Street North, to board; slept with John Ingle and in same room with Barton and Watson. He was noticed to have an eruption on his face, and after two days was discharged because covered with vermin. This man had lately come from McAllister's camp on Moose River (see previous report).

March 14th, William H. H. Bobo, ill since the 11th, was removed to hospital from 401 Fifth Street North. The eruption was discrete but abundant; the pocks, however, were not well developed. Severe obstructive laryngitis developed, and he died March 22d.

March 12th, Mrs. Isaiah Bobo, ill since the 9th, was removed from a filthy shanty in rear of 211 Washington Avenue North, to hospital. She had mild, discrete variola, and was discharged April 16th. Her husband gave a history of a slight illness with eruption just previous to this, for which no physician was consulted.

March 13th, from the same place, was removed Eveline Bobo, sixteen years old, ill since the 10th. The case was one of severe, confluent form, and terminated fatally March 23d.

March 15th, Clara Bobo and Wm. Haw, a boarder, were removed to hospital with exceedingly mild varioloid. The rest of the family, Samuel Bobo, wife and several children were removed to quarantine ward.

March 16th, the case of Calvin Bobo, teamster, living at 129 Twentieth Avenue South, was reported. He had been ill since 13th. Removed to hospital 17th. The case was hemorrhagic from the outset; confluent, almost the entire surface being one suppurative mass, and altogether the most terrible case I have ever seen. The fetor could be but slightly controlled even by a liberal use of disinfectants. Death resulted March 27th.

About two weeks previous to the breaking out of these cases in the Bobo families, Mrs. Samuel Bobo, at 211 (rear) Washington Avenue North, and Mrs. Calvin Bobo, at 129 Second Avenue South, became ill with fever, pains, etc., followed in each case by an erruption. Each was attended by her family physician, and it is fair to suppose that no suspicion existed in the minds of these gentlemen as to the possible dangerous nature of the cases. These two probable cases of varioloid occurred just two weeks from the time William Bobo (son of Samuel) was discharged from the hospital. These facts, with others, have given color to the suspicion that infected goods were by some means removed from the hospital without the knowledge of those in charge. I forgot to mention that Samuel Bobo's son, Joseph, ten years old, at his admission to the quarantine ward presented evidence of having lately had varioloid.

April 10th, William Meyer, laborer, age 22 years, was reported sick with variola at 318 Eighth Avenue Northeast. The eruption was confluent, suppurative stage. He had been ill since the second, eruption having appeared on the fifth. He had been violently delirious for three days, tearing up his bedding and clothing. Dr. —— attended him, and had him removed, April 6th, from Kramer's American House, where he became ill, to his brother's house, where I found him. Dr. —— saw him the seventh and eighth. First called the disease typhoid fever, and later the measles, according to the history given by the family. They say the doctor promised to call on the ninth, but failed to do so. On that day the health office clerk told me Dr. —— had a suspicious case, but wanted to see it again before having me see it. The following day, April 10th, it was reported, Dr. —— not having seen it since the eighth. Extremely bad weather prevented the patient's removal to the hospital till the eleventh. He died April 14th. What the result might have been had he been properly cared for from the first, I cannot say.

April 17th, Dr. A. Rosbach, of 210 Plymouth Avenue, was reported to the health officer as a proper subject for investigation. I found him with a well-marked varioloid eruption. He had been ill since the ninth, the eruption having appeared on the eleventh. The office was open, and he answered my knock at the door of the private room by shortly appearing with a fur cap and muffler over his head and face. He had been doing business as usual, and according to report, had lately attended a confinement case. He was persuaded to board at the hospital till April 28th. So far as known there were no results of his outrageous proceedings.

John Meyer and wife having been in constant attendance upon their brother, William Meyer, till his removal, could hardly fail to contract the disease. Both were vaccinated at my first visit, April 10th, (having never before been vaccinated), and with good result in each case. Both became ill the seventeenth, were removed to hospital the eighteenth, and after a mild course of varioloid were discharged May 6th and May 1st, respectively.

Joseph Schwarz, living in the same house, after being exposed declined vaccination. He became ill April 20th, the eruption appeared the twenty-second, and he was removed to the hospital the twenty-third. He had been vaccinated twenty-five years before, and its good effects were seen in a modification of the eruption and of the severity of the disease. He was discharged May 20th.

April 18th was reported the case of Albert, fourteen months old child of Michael Kramer, of the American House. He had been ill since the twelfth. The eruption was fairly well developed and vesicular. The eruption did not become pustular, but aborted and rapidly desquamated so that the child was apparently well of the variola on April 27th. The twenty-fifth and twenty-sixth it was covered with a roseolous rash. As a precautionary measure the family were subjected to quarantine restrictions for two weeks after that date. The child later became ill and died from some other disease under the care of another physician.

April 14th, Francis Waldfogle, domestic at the American House, went to her home, four miles above Excelsior. She was reported to have developed confluent variola soon after reaching home, and to have died. (See report for Chanhassen.)

These three cases occurring as related, either at or in connection with the American House, must have had a common source, but that source has not yet been discovered.

May 6th, T. C. King, driving ice wagon for Cedar Lake Co, ill since the first, was reported to the health officer as having variola, on Fifteenth Street near company's ice house. The attending physician had dismissed the case on the fifth, as the patient was feeling so well, the symptoms not having been distinctive, and there being apparently no rash or other serious trouble. He was recalled on the sixth, found a vesicular eruption and at once reported at the health office. The patient was at once removed to the hospital, where he developed discrete variola, somewhat modified by a twenty years old vaccination. He was convalescent when I was relieved from quarantine duty, May 20th

In explanation of the origin of this case, the employer of King, Mr. Watson, in charge of the ice delivery, and in whose house King was boarding, gives the following history: April 1st Mr. Watson's infant child became ill and after a few days of high fever became covered with a rash which became vesicular and later pustular. The family repeatedly asked the attending physician if it was perfectly free from danger, and he assured them it was so, and that it was all the result of a late vaccination to which the child had been subjected. April 17th, Mr. Watson himself became ill, and after a few days a slight eruption, which the doctor said was a result of some medicine he had been taking. At the time of the removal of King, the scars of the variolous pustules were plainly visible and distinctly palpable on both father and child. Previous to April 1st the Watsons had lived nearly opposite the Petries, on Second Avenue South, and it is a suspicious circumstance that this child should become ill in thirteen days from the time the latter family was discharged from quarantine, though there was at no time any intercourse, either direct or indirect, between the families.

Besides the cases already enumerated, among the large number of persons who had been exposed to small pox and were quarantined as a precautionary measure, several presented more or less of the symptoms of the disease, but without eruption, while two or three of the number developed a few points of eruption, but of so undistinctive a character as to have afforded small ground for suspicion had not the time and other circumstances been suspicious.

Of the thirty-three cases of variola and varioloid which were at the hospital or under my care at their homes (not counting the child of Mrs. Folsom, who did have pneumonia and probably did not have variola), nine died. In this number I do not include those who were convalescing at the time I began my duties at the hospital, nor two cases which were without much doubt varioloid, but of an exceedingly mild character. The rate of mortality was a high one, notwithstanding the best care and attention which I and the nurses could bestow. Some of the fatal cases had the additional advantage of the care of their own relatives. Among the men the fatal cases (with the exceptions of Barton and Meyer) were of hard drinkers.

Respectfully yours,

E. J. Brown, M. D.,
Quarantine Physician.

ANALYSIS OF THE OUTBREAKS OF SMALL POX IN MINNEAPOLIS, AS REPORTED BY DR. E. J. BROWN, QUARANTINE PHYSICIAN, FROM JANUARY 14TH TO MAY 20th, 1883.

I. Outbreak.

Case 1. F. C.
Origin, exposed at city quarantine hospital.
Case 2, from Case 1.
Case 3, from Case 1.
Case 4, from Case 1.

II. Outbreak. Quarantined and treated at home.

Case 5. J. R.
Source unknown.

Case 6. Child in R's family, of Mrs. McC., Case 5.
Case 7. Child's mother, Mrs. McC., Case 5.
Case 8. Mrs. McC's mother, Case 5.

NOTE.—Mrs. N., of Iowa, visiting the family of Case 5, returning home, infected thirteen cases, of whom three died.

III. Outbreak. Treated at hospital.

Case 9. J. G.
Origin unknown.

IV. Outbreak. Treated at hospital.

Case 10. Wm. B.
Origin, Cook Brothers' camp. (For infection of others, see Outbreak XI and note of origin).

V. Outbreak. Treated at home.

Case 11. Miss E. A., in Mr. P's family.
Origin unknown.

NOTE.—Case not recognized till others occurred.

Case 12. Mrs. P., from Case 11.
Case 13. Child of Mrs. P., from Case 11.
Case 14. Child of Mrs. P., from Case 11.

VI. Outbreak. Treated at hospital.

Case 15. J. R.
Origin, Trout Lake Ranch.

VII. Outbreak. Treated at Hospital.
Case 16. C. A. T.
Origin, toting from Aitkin.

VIII. Outbreak. Treated at hospital.
Case 17. Mr. P—y.
Origin, unknown.
NOTE. Not reported or recognized.
Case 18. Mrs. P—y.
Origin, Mr. P—y.

IX. Outbreak. Treated at hospital.
Case 19. T. K. M. (clerk health officer's office).
Origin, patients of hospital.

X. Outbreak. Treated at hospital.
Case 20. J. I.
Case 21. G. B.
Case 22. R. W.
Origin, possibly a fellow workman sleeping in same room, lately from McAllister's camp on Moose River; no record of disease in that camp.

XI. Outbreak. Treated at hospital.
Case 23. W. H. H. B.
Case 24. Mrs. I. B.
Case 25. E. B.
Case 26. Miss C. B.
Case 27. W. H. (boarder B. family).
Case 28. Mr. C. B.
Origin, infected clothing from the hospital removed by Wm. B. (case 10) February 7th, when discharged. Two weeks after two women in the family had varioloid, not recognized until two weeks more, when the above six cases were taken sick.

NOTE. Balance of family, father, mother and children, were put in quarantine ward.

XII. Outbreak.
Case 29. W. M. Exposed at Kramer's American House.
Origin, not known.
NOTE. Removed to brother J. M.'s house, then to hospital.

(Case 30, Outbreak XIII, see below.)
Case 31. J. M. (brother Case 29.)
Case 32. Mrs. J. M.
Case 33. J. P.
Origin, same as Case 29, but not known.
Last three treated in hospital.
Case 34. Child of M. Kramer, American House; taken sick April 12th; quarantined at home; re. covered April 27th; quarantine continued for two weeks more.
Case 35. F. W. (Chanhassen, Carver County, epidemic.)
Origin, Cases 29, 31, 32, 33, 34, 35 and 36, common but unknown.

XIII. Outbreak. Treated at hospital.
Case 30. Dr. A. R.
Origin unknown.

XIV. Outbreak.
Case 36. Mr. W's child, taken sick April 1st.
Case 37. Mr. W.

NOTE.—Cases 36 and 37 not recognized nor quarantined, but scars of variola were visible when case 38 was taken sick and removed to hospital.

Case 38. T. C. K. Taken sick May 5th; sent to hospital.
Origin, child of Mr. W., in whose house he boarded.

XV. Outbreak.
Case 39. A. S. Sick Feb. 5, 1883; died.
Case 40. T. S. Sick Feb. 5, 1883; recovered.
Origin cases 39 and 40, Cook Bros.' camp.

NOTE.—Private patients, quarantined and treated at home.

JANUARY TO MAY 20, 1883.

Number convalescents Jan. 14th, 1883	8
Number cases January 14th to May 20th	33
Number deaths January 14th to May 20th	9
Totals—	
Number cases	41
Number deaths	9
Families Infected—	
Private houses	15

In which single cases		6
Hotels		2
Offices		2
Escapes—		
To Finchford, Ia		1
Which caused	Cases	13
	Deaths	3
To Chanhassen, Carver County (death)		1
To Maple Plain, Hennepin County		1

The above includes cases reported as escapes from pineries.

ESCAPES FROM PINERIES:

To Minneapolis.*

NAME.	CAMP.	Date of Departure.	Date reached Minneapolis.	Put in Hospital?	Died?	Date Discharged.	Number Infected by.
I.—W. B.	Cook's	Jan. 17..	Jan. 23..	Yes.	No.	Mar. 6 or 7	None.
W. H.	Cook's	Jan. 17..	Jan. 22..	Not sick	....	....	None.
II.—J. R. and wife	Trout Lake ranche	Jan. 20..	Tak'n sick	J. R. Yes.	No.	....	None.
III.—C. A. T.	Toting from Aitkin to Swan River..	Jan. 31..	Feb. 4...	Yes.	Yes. Feb. 14.	....	None.
IV.—T. S.	Cook's	Feb. 1...		....	No.	....	None.
A. S.	Cook's	Feb. 1...	Feb. 5...	....	Yes. Feb. 18.	....	None.
V.—Teamster	From pineries.	....	Feb. 18..	No.	Not sick.	....	Mar. 4, J. I., G. B. & R. W. taken sick; 2 last died.
J. P	McAllister's,† Moose River	....	....	....	....	....	

*Included in above summary.

† No small pox reported at this camp.

To Duluth,

One case, reported Jan. 31, 1883; infected no one. No more details given.

To Brainerd,

One case, died; infected no one. No further details.

To Morris, Stearns County,

One case, reported April 9th by Dr. Hulbart- health officer; case recovered; infected no one.

SMALL POX IN DULUTH.

First Outbreak—(Escaped Case from Pineries.)

First report:

Jan. 25, 1883, daily paper reported one case.

January 31st, report from Dr. Smith, "one case; origin, lumber camp near Grand Rapids; doing well, every precaution taken."

February 12th, N. P. Junction quarantined.

Details:

Jan. 25, 1883, secretary wrote Dr. V. Smith, Duluth, member of State Board:

* * "I see by to-day's paper that a case of small pox, evidently from the same camp, has appeared at Duluth."

Jan. 31, 1883, Dr. V. Smith replied: "You are correct about a case of small pox here, and that the man came from one of the lumber camps near Grand Rapids. Dr. McCormick says the man is doing well. Every precaution is being taken to prevent the spread of the disease."

February 10th, secretary telegraphed Dr. Smith, Duluth: "go to Duluth Junction, and if need be, quarantine men coming from infected camp. In case of doubt, quarantine. Go immediately and telegraph me of any escape of disease that way."

February 12th, Dr. Smith telegraphs from N. P. Junction:

"Will establish quarantine here to-night."

March 14th, secretary wrote Dr. Smith, Duluth:

"No report of the small pox at Duluth from health officer of city, nor his name. Please serve this notice on him, and request a full report, to be mailed to this board immediately. The doctor renders himself liable by not reporting. Ask him to furnish the following data:

1st. Origin of outbreak; name of first case, and all facts as to his exposure and sickness.

2d. Steps taken for his care, and to prevent spread of disease.

3d. History of subsequent cases, and the steps taken for their care.

4th. Bring report up to date."

SECOND OUTBREAK.

April 27th, Dr. J. C. Rosser telegraphed from Brainerd:

"One of our citizens, who has been to Duluth and returned fourteen days since, has confluent small pox."

Secretary telegraphed reply, April 27th:

"Go to Duluth; see Dr. Smith; get facts of variola; telegraph."

April 29th, Dr. J. C. Rosser telegraphed from Brainerd:

"Visited Duluth according to instructions, and fixed the matter as tight as wax. The disease was contracted at Fargo, D. T."

SUMMARY

OF THE OTHER OUTBREAKS.

I.

Date of first report	Feb. 16, 1883
Location	Watertown, Carver County
First case taken sick	Feb. 12, 1883
Two other cases March 1, 1883.	
Health officer	Dr. A. C. Lewis
Number of cases,	3
Number of families infected	1
Number of deaths	0
Quarantine raised	April 1st

II.

Location	Shell Lake, Wis
Origin	Pittsburgh, Penn
Date of first report	March 17, 1883, 9 A. M

Reporter, Dr. Clark, Health Officer, Stillwater, who telegraph: "Small pox in camp on Northern Wisconsin Railroad; men scattering for home."

Same date secretary telegraphed: "Meet me at Union Depot, St. Paul, this afternoon."

There a plan was arranged. Dr. Clark returned; called meeting of Stillwater lumber firms who were working the pineries near Shell Lake. As a result, Dr. Merrill, on the twenty-second March, and himself, on the twenty-third, went by different routes, to meet at Shell Lake, vaccinating the men as they went. This was successfully accomplished, and April 10th he telegraphed:

"All men in camp or on the drive vaccinated, so that we are protected."

In the meantime the secretary arranged for co-operation with the Wisconsin State Board, who took care of the local outbreak. But two cases reached Minnesota—at Stillwater. They were promptly sent to the pest house, and no others suffered.

III.

Location, Maple Plain, Independent Township, Hennepin County.

Origin	Kramer's American House, Minneapolis
Date of first report	April 1, 1883
Reporters	Doctors Leonard and Fassett
Number of cases	3
Number of families infection	1
Number of deaths	1

IV.

Location	St. Paul
Origin	unknown
Date of firt report	April 7, 1883
Reporter	Dr. D. W. Hand
Number of cases	3
Number of families infected	1

No further outbreak.

V.

Location	Long Lake, Hennepin County
Origin	Not traced
Date of first report	April 6, 1883
Reporter	Dr. C. E. Dow
Number of cases	1
Number of families infected	1
Number of deaths	0

No further outbreak. It is not unlikely that exposures to this case caused the outbreak at Dollymount, Traverse County, May 8, 1883.

VI.

Location	Morris, Stevens County
Origin	lumber camps
Date of first report	April 9, 1883

Reporter..................................Dr. Hulbart, health officer
Number of cases.. 1
Number of families infected.. 1
Number of deaths... 0

VII.

Location..................................Chanhassen, Carver County
Origin, first case came from Kramer's American house, Minneapolis.
Date of first report..April 16, 1883
Reporter ....Dr. E. H. Lewis
Number of cases.. 2
Number of deaths... 1
Number of families infected.. 1

An interesting report bearing upon the period of infectiousness of small pox, and based upon the study of this outbreak, has been prepared by Dr. James H. Dunn of Shakopee at the request of the secretary, and is herewith submitted.

VIII.

Location..................................Wabasha, Wabasha County
Origin...Wisconsin
Date of first report..April 25, 1883
Reporter..Dr. Low, health officer
Number of cases.. 5
Number of families infected.. 1
Number of deaths... 1

Secretary was telegraphed for, doubt having been expressed as to the accuracy of the diagnosis.

The first case was confluent variola.

The measures taken were successful in limiting the outbreak to the family in which it originated.

IX.

Location ....Brainerd
Origin..Fargo, D. T.
Date of first case,..April 27th, 1883
Reporter,..Dr. J. C. Rosser.

Number of cases,.. 1.
Number of deaths,.. 0.
Number of families infected,.. 1.

X.

Location,...........................Dollymount, Traverse County.
Origin,..Long Lake or Minneapolis.
Date of first report, ...May 8th, 1883
Reporter,......................Dr. Wm. F. Holden, health officer.
Number of cases,.. 13.
Number of deaths,.. 2.
Number of families infected,.. 2.

The local board of health organized, health officer appointed and proper measures taken under the direction of the State Board of Health.

Quarantine was raised and epidemic ended June 22d.

XI.

Location,............Frankfort (St. Michaels), Wright County.
Origin,...unknown.
Date first case sick,.....................................May 2d, 1883.
Date first case died,...................................May 11th, 1883.

Disease not recognized till May 11th, day of death. No action taken by local board till May 23d, when Dr. Pinault, Osseo, first saw the cases.

Date of report,..May 24th.
Reporter,................Dr. Pinault (afterwards) health officer.
First report (telegraph):

"Seventeen cases variola St. Michaels; many refuse vaccination; send instructions."

Same date secretary telegraphed Dr. Leonard to visit and report, who, same date, visited Dr. Pinault, Osseo, and the 28th went into the infected district from Elk River with Dr. Scoboria. He reported (telegraph) "twenty cases and three deaths; matters bad enough, will pobably be worse."

May 29th, secretary went into infected district from Osseo with Dr. Pinault; visited and organized every local board in infected district; after much trouble, induced the local board and prominent citizens of Frankfort to set the example of accepting vaccination, and there was much less trouble afterwards.

Dr. C. Q. Scoboria was appointed health officer at Otsego, and both he and Dr. Pinault served in some of the adjoining towns.

The final result was:

In Frankfort:

Cases,	59.
Families infected,	17.
Deaths,	6.

XII.

In Otsego:

Cases,	8.
Families infected,	2.
Deaths,	0.

XIII.

In Elk River, Sherburne County, health officer Dr. N. K. Whittimore:

Cases,	1.
Families infected,	1.
Deaths,	1.

XIV.

In Corcoran, Hennepin County:

Cases,	6.
Families infected,	1.
Deaths,	0.

XV.

In Hassan, Hennepin County:

Cases,	1.
Families infected,	1.
Deaths,	1.

XVI.

In Greenwood, Hennepin County:

Cases,	1.
Families infected,	1.
Deaths,	0.

Grand total:

Cases, ... 76.
Families infected, ... 23.
Deaths, ... 8.
Quarantine raised July 14th.
Total duration, two months and fourteen days.

XVII.

Location, ... Leaf Mountain, Otter Tail County.
Origin, ... on ship-board.
Date of first report, ... June 10th, 1883.
Reporter, Dr. Titcomb, Evansville, Douglas County.
Number of cases, ... 4.
Number of families infected, ... 2.
Number of deaths, ... 0.
No help was given to Dr. Titcomb by the local board of health.
Quarantine raised July 26, 1883.

XVIII.

Location, ... St. Paul.
Origin, ... unknown.
Date of first report, ... June 28th, 1883.
Reporter, ... Dr. Henry F. Hoyt, health officer.
Number of cases, ... 10.
Number of deaths, ... 4.
Number of families infected, ... —.

XIX.

Location, ... Munson, Stearns County.
Origin, ... unknown.
Date of first report, ... Oct. 16, 1883.
Reporter, ... Dr. H. Schmidt, health officer.
Number of cases, ... 3.
Number of families infected, ... 1.
Number of deaths, ... 0.

XX.

Location, ... Hallock, Kittson County.
Origin, ... Winnipeg, Manitoba.
Date of first report, ... November 18th, 1883.

Reporter,................N. P. Eckland, station agent, Hallock.
Number of cases,.. 1.
Number of families infected,.. 1.
Number of deaths,... 0.

XXI.

Location,..St. Paul.
Origin,...ship-board.
Date,...December, 1883.
Reporter,.........................Dr. H. F. Hoyt, health officer.
Number of cases,.. 1.
Number of families infected,.. 1.
Number of deaths,... 1.

WATERTOWN, CARVER COUNTY, MINN.

SUMMARY OF FACTS.

First report (on inquiry by secretary):
  Date, Feb. 15, 1883 (telegraph to Dr. Hand).
  Reporter, Ernest Hamlin.
  Number of cases, one (L. H.).
First case, L. H.
  Place of exposure, not given.
  Date taken sick, Feb. 5, 1883.
Total during epidemic:
  Number of cases.. 3
  Number of families infected.. 1
  Number of families quarantined................................. 1
  Number of deaths... 0
  Last report..March 1st.
  Attending physician, Dr. A. C. Lewis.

DETAILS.

Feb. 15. 1883, Dr. Hand notified by telegram from Ernest Hamlin of existence of one case, Levi Halgurs, of confluent small pox, in care of Dr. A. C. Lewis, by direction of town board: "Prospects of another case; will inform." Dr. Hand forwarded to secretary.

February 16th, secretary telegraphed to Dr. Lewis for information.

February 18th, Dr. Lewis wrote: "Telegram received yesterday. Have now one case a mile from village. The house away from main road; no trouble in quarantine; no one has had contact with patient but family and myself since the first day of fever, the fifth of February; other members of the family vaccinated. Send instructions as to care of sick and disinfection of persons and property."

February 22d, secretary replied and sent instructions.

Dr. Lewis replied February 23d: "Patient convalescing. No new cases; vaccination taking well; some feeling sick from that cause. Family live in two rooms, and fumigation will be very difficult. Why not some other way? Will report more cases if they occur."

February 26th, Dr. Lewis wrote: "Two more of family down with variola, or varioloid I suppose it should be called; vaccination seemed to have worked well, their arms quite bad; eruption appeared Friday, 23d, and is slight. Pustules do not seem to fill well. Patients feel well; appetite good, etc.; in first patient desquamation almost perfect."

Secretary wrote, February 28th: "Cases are varioloid; indications of their fate if they had not been vaccinated; not likely to be much sick, but should be quarantined as closely as the worst cases. In convalescence use baths freely every night, followed by an unction with cosmoline; should keep all together until ready to discharge the lot."

March 1st, Dr. Lewis wrote: "No new cases; others doing well." Inquires as to disinfection of the log house and the fees which ought to be paid him, etc. No further reports from the case received.

SMALL POX RESUME IN NORTHWEST WISCONSIN.

Reported here as illustrating methods of co-operation between States where, as in this instance, the danger was greatest in an adjoining State to the one in which the disease first appeared.

SUMMARY.

First report (telegram).
Date, March 17, 1883.

Reporter, Dr. Clark, health officer of Stillwater.

Number of cases not given.

Quarantine established at Stillwater.

First case: Taken sick March 7th; origin, Pennsylvania.

One case at Stillwater; put in pest house March 16th. Another case, April 6th, arrived at Stillwater and was put in pest house.

DETAILED ACCOUNT.

March 17, 1883, 7 A. M., health officer of Stillwater telegraphs:

"Small pox broke out in camps on North Wisconsin Railroad; be on the look-out. Men are are scattering for home. Quarantine established here."

Secretary replied, March 17th:

"In what camps, and how many cases? Meet me at St. Paul Union Depot, 2:25 to-day. Answer."

Secretary notified by telegraph health officers of Wabasha, Winona, St. Paul, and Dr. Rosser, at Brainerd.

Same date and hour, March 17th, notified secretary State board of health of Wisconsin, asking him to investigate immediately and answer what steps he had taken.

Same date, secretary of Wisconsin Board of Health replied: "Have telegraphed Dr. Hoegh to act for this board."

Same date, Dr. Hoegh telegraphed: "Will leave for North Wisconsin R. R. to-morrow night. Leave statement of affairs at depot if inconvenient to meet me." (He did not come.)

Health officer of Stillwater replied: "Will meet you at St. Paul, 2:25. Two camps affected, as far as we know of."

Under date, March 16th, Dr. Clark, health officer of Stillwater, wrote: "Small pox has appeared in Montgomery's camp near Shell Lake, Burnett County, Wisconsin. Man broken out with disease came as far as Hudson on 14th and was returned by authorities to Shell Lake where he is now in hospital. A man from same camp, who had been in company with this patient, came to Stillwater applying to City Hospital for treatment for a bitten finger. Having received notice from Shell Lake we sent the man to the pest house for quarantine, although showing no signs of the disease. I telegraphed Dr. C. P. Johnson, of Hudson, as to what had been done about quarantining the camp, who replied: 'Dr. Pearly has been notified to have authorities quarantine Montgomery's camp.' I fear, as the camp is about breaking up, that many who have been exposed will scatter to their homes, carrying infection with them. We shall quarantine all coming from that camp, if possible, which will be very difficult, and I fear we may have some cases from there yet. Your advice or presence would be appreciated. Want to hear from you immediately."

Secretary met Drs. Clark and Johnson in St. Paul on March 17th, and arranged for systematic observation of the infected district in Wisconsin.

Under date March 18th, secretary wrote a note, to be given to Dr. Hoegh as he passed the Red Wing depot, giving the facts, so far as known to him, of the matter, adding the information learned in St. Paul on the seventeenth from Drs. Johnson and Clark: "There were two cases—one from Montgomery's camp, at Shell Lake, and the other from a camp ten miles beyond Cable, on the North Wisconsin Railroad. The first was sent back to Shell Lake, the second went to Eau Claire. Very likely the settlement around Shell Lake Station is infected, as the case was at large there some time after eruption. So far as we can learn he brought the infection from Pennsylvania, whence he came about two weeks before he broke out. The other case, above Cable, *seems* not to have been out of his camp for many weeks. It is *possible* that his infection came from Duluth, but we have taken every precaution to prevent that. I advise that you visit Shell Lake and camp above Cable yourself. The lumbermen fear quarantine and vaccination as interfering with business and disabling the men. A personal inspection will enable you to know, and there is no other way; and the railroad surgeons are on the side of lumbermen, if it comes to active measures. When you get to St. Paul telegraph Dr. Clark, Stillwater, to meet you at the Junction, who will give you latest information as to the co-operation to be gotten of the lumber firms."

March 17th, Secretary State Board, Wisconsin, wrote:

"Thanks for telegrams; chairman local board of Shell Lake, telegraphs: 'but one case, four miles from town; came from camp fourteen miles out; supposed to have contracted small pox from second hand clothing which he had bought; is recently from Pennsylvania. The case, the camp, the hotel in which he stopped when he first came from camp, are all quarantined and all quiet.' If necessary Dr. Hoegh or myself will go. Judge matters are now in satisfactory shape."

On March 18th, Dr. Hoegh notified the secretary of this board that he had not gone, not considering it necessary.

March 20th, Dr. Clark, health officer of Stillwater, writes:

"Chamber of Commerce held a meeting yesterday morning; I made a statement to them; they requested the Lumbermen's Board of Trade to take steps at a meeting which convenes to-day. Two lumbermen, present yesterday, would have sent a physician off this morning, but I advised them to wait till we could get more help in the way of men familiar, interested and of influence in that region. A committee was sent to the railroad superintendent, who offered every facility in his power. The men are camping out of the woods on the drives, and it will be very difficult to catch them. The opportunity was lost when the Wisconsin authorities failed to place an inspector at Shell Lake. Johnson, of Hudson, answered a telegram of inquiry yesterday as follows:

'At Shell Lake, vaccinating as fast as they can get virus. Four men left infected camp Friday, two going to St. Croix Falls, and two to Tract Lake. I hear the balance are about to leave; no sickness at Drummond. Swede girl who left Shell Lake and went to Cable is at large. Every body near Shell Lake should be vaccinated.' We inspect all incoming trains. I may go up with the party. Another case reported in vicinity of Shell Lake yesterday, showing that the first man must have brought infection with him. The history of that case given by the man here in quarantine, is: 'that this man and the sick one hired out at Stillwater, Saturday, February 24th; that they got to Montgomery's camp on the 25th, Sunday; the man was taken sick on the 7th of March; broke out on 9th; came to Shell Lake on 10th; remained at hotel until the 14th; went to Hudson on 14th, and was returned as you know. He stated that he had left Pennsylvania about ten days before reaching Stillwater, stopping a few days on the route, two or three days at Hastings, Minn.' I doubt if the so-called Drummond case is genuine. Wisconsin board must have a man on the ground permanently before they get through with this matter."

March 23d, secretary of Wisconsin State Board of Health writes: "Chairman local board of Shell Lake telegraphs to-day: 'Every thing in good shape; all exposed parties vaccinated and suspicious places quarantined; no prospects of more cases.' Sorry Dr. Hoegh did not go; telegrams were so assuring that it did not seem necessary. There is a physician at Shell Lake, and chairman of the board is an intelligent man. The original case is in quarantine remote from the village."

March 22d, Dr. Clark, health officer of Stillwater, reports: "Saw Dr. Johnson, of Hudson, yesterday. Had been whole length of line on engine. They found nothing at Drummond. Man from there had been held for some days; had a breaking out on his hand; showed no other signs of sickness. Dr. Merrill left here this morning to vaccinate in vicinity of Shell Lake, commencing below. I go to-morrow morning to Taylor's Falls and strike in above. We shall meet at Shell Lake Sunday or Monday. It seems as though we should hear of further outbreaks to-morrow."

Under date March 27th, secretary of this board wrote to secretary of State Board of Wisconsin:

"We look closer to small pox than you do. We persuaded two physicians to visit the camps and vaccinate around Shell Lake. These doctors return to-day and report five cases in Shell Lake up to this date. The men are coming out, and we shall watch them as they come into our State, and shall watch the progress of the matter at Shell Lake."

Under date March 30th, secretary State Board of Wisconsin replies:

"Favor at hand. We are doing best we can to restrict small pox. If you are doing better we are ready to congratulate you, and rejoice in it." Detailing events as hitherto related, he goes on to say: "Dr. Pearly visited that camp and vaccinated every man in it, and kept them there, where they are now all well; but before he went there, and before the men knew what was the matter with the man who had gone away, one man had left camp and gone to Stillwater. Dr. Pearly notified city physician of Stillwater, describing him, and he is in quarantine there. The hotel was fully exposed, was put under quarantine, and I believe the quarantine has been effective. One family had frequent intercourse with it while the man was sick there; result, five cases in hotel and one in family. Dr. Hoegh, who on account of telegrams did not think it necessary to go on 17th, has gone, and I think he is there now. He will correct anything that is wrong."

Under date April 6th, Dr. Clark, health officer of Stillwater, reports:

"One case of small pox from infected region is in our pest house; came into town in the afternoon; spent his time in various saloons until 10 P. M., when he went to a room frequented by 'late drunks' and turned in. I did not hear of him until the next afternoon, when a policeman told me that there was a man from Shell Lake at this room who seemed to be sick. I found him in high fever, and that he had had a chill the afternoon before. I had him taken to the pest house immediately. I had the room fumigated and closed. The men who had slept there the night before had scattered in the morning, and no one knew who or where they were.

This man broke out on the Friday following the Tuesday on which he had the chill; I hope, gave the disease to no one else. The authorities at Shell Lake let these men out upon us without any warning, and all we can do is to keep a sharp lookout."

Same date (April 6th) secretary enclosed copy of above letter to Dr. Reeves, secretary Wisconsin State Board, calling his attention to the complaint.

Under date April 8th, he replied:

"I foward the letters of Dr. Clark to Dr. Hoegh, who has taken every precaution to prevent the escape of infected persons from Shell Lake. Up to the sixth no new case had developed outside the infected family; but two other persons were known to be slightly ill, and were closely watched. Have written the newly elected chairman of local board Dr. Clark's complaint and asking him to prevent the cause."

Under date April 10th Dr. Clark, health officer of Stillwater, acknowledges receipt of telegram as to vaccinating men going upon the drive:

"Received letter from Dr. Reeves this morning caused by your letter inclosing mine of sixth, asking my views on the situation. I will give them as to the attempt to padlock the stable after the horse has got out. All the men were vaccinated before going on the drive; Dr. Merrill and myself vaccinated in the woods of Shell Lake all who are to remain on the drive. C. N. Nelson & Co. of this city have taken the contract to drive all the logs on the stream in that vicinity, so that this section will be well cared for. Dr. Merrill had already been up in the woods on the Minnesota side, so that our lumbermen in all directions are well vaccinated."

Under date April 10th Dr. Hoegh, member representing State Board of Health, Wisconsin, at Shell Lake, writes from La Crosse:

"The quarantine at Shell Lake was very defective in the beginning; people there and those going through very slightly inclined to obey local authorities. Since my visit they have acted with more energy.

"Two weeks have elapsed since I went there (March 27th). No new cases have occurred there except one case in quarantine in an isolated house.

"One of my suggestions was one which you mentioned in your letter to Dr. Reeves of April 8th, to keep suspected persons under strict observation for two weeks. We established an observation camp where for two weeks this was done. Five persons were in quarantine."

MAPLE PLAIN, INDEPENDENCE TOWNSHIP, HENNEPIN COUNTY.

SUMMARY.

First report (on inquiry by secretary):

Date	April 14, 1883.
Reporter	———
Number of cases	3

First case, J. H.
 Exposed at Minneapolis (American House).
 Date of attack, April 1st.
 Date of death, April 16th.
 First visit by physician, April 5th.

Totals during epidemic:

Number of cases	3
Number of deaths	1
Number of families infected	1
Number of families quarantined	1

Attending physician, Dr. Fassett, Rockford, Hennepin county.

DETAILED ACCOUNT.

April 14th, notice received at office of State board of three cases of small pox at Maple Plain.

Secretary had telegraphed on April 12th.

April 17th, S. Briley, chairman of board, reports that man died on 16th; buried on premises; disinfection performed, etc.

On April 18th, secretary asked Dr. Leonard, of Minneapolis, to go up and investigate.

April 20th, Dr. Leonard writes from Maple Plain: "Am looking after variola here. Find everything has been done properly except the reporting of the facts to our board; that will be done immediately.

James Hutchinson brought the disease from Minneapolis, April 1st. Patient died April 16th, and next day was buried on the premises; the authorities would not permit of public funeral. Two other cases of varioloid in the same house doing well. House half a mile from others, on unfrequented road; no school in session; vaccination general."

April 23d, Dr. Fassett, of Rockford, in charge of case at Maple Plain, Independence Township, reports: "I saw the case on the fifth. Had slight eruption on cheek and other parts of body, which sister remarked was similar to one prevailing at Long Lake, from which she herself had suffered. Did not pronounce it small pox; returned next day and decided it to be so. Notified town board, etc. There are three members of this family—two brothers and sister. The patient had not been vaccinated, the sister and other brother had. April 10th, a nurse was procured from city hospital, and at this date the sister was attacked with varioloid, and on twelfth the other brother. The older brother died on the fifteenth; the other two convalescent on that date."

Secretary wrote for more details, April 24th, to Dr. Fassett.

April 26th, Dr. Fassett replied: "Am not the health officer; Maple Plain is in the Township of Independence. Mr. Hutchinson exposed while in Minneapolis, at the brick hotel on First Street, called the American House, and kept by a man named Kramer. Several cases have occurred at that hotel. Revaccination and vaccination have been going on rapidly since the occurrence of the disease. Animal virus has failed in many instances; other physicians are complaining. House was thoroughly disinfected by order of authorities. No more cases."

LONG LAKE, MEDINA TOWNSHIP, HENNEPIN COUNTY.

SUMMARY.

First report (official):
  Date, April 19, 1883.
  Reporter, Dr. C. E. Dow, Minnetonka Mills, Hennepin County.
  Number of cases, one, S. F.
  Number of families infected, one.

First case, S. F.:
  Date taken sick, April 6th, 1883.
  Date quarantined, April 8th.
  Source of infection, St. Paul,(?)

Total:

Number of cases	1
Number of families infected	1
Number of families quarantined	1
Last report	April 28th.

Physician, Dr. Dow.

DETAILED ACCOUNT.

Secretary wrote, April 14th, to Dr. C. E. Dow, inquiring about small pox at Long Lake Station. In reply Dr. Dow wrote, April 19th:

"Samuel Fogleson, of Long Lake, came down with varioloid on the sixth of April. I saw him on the evening of the seventh; quarantined on the eighth. Eruption appeared on the eighth, Case uncomplicated. No other case near that I know of. Up to fifteenth doing well."

April 18th, secretary wrote to Dr. Leonard, of Minneapolis, to be on the look-out for the matter.

April 25th, Dr. Dow reports:

"Every step has been taken to disinfect every article of clothing in the entire house. Patient caught the disease by being in contact with or in company with a man who reported himself a machine agent from St. Paul."

Under date April 28th, Dr. Dow reports:

"Uncertain as to origin of disease. Patient is well and there are no signs of any further trouble in the family."

MORRIS, STEVENS COUNTY, MINN.

SUMMARY.

First report:
  Date, April 13, 1883.
  Reporter, Dr. H. L. Hubbard, Morris, Stevens County.
  Number of cases, one.

First case, J. M.

Origin, pineries near Aitkin or Grand Rapids, hotel.

Date of attack, ———

Date of first visit by physician, April 9th.

Date quarantine began, April 9, 1883.

Totals during epidemic:

Number of cases	1
Number of deaths	1

DETAILED ACCOUNT.

Number of houses infected, one (quarantined, boarding house).

Under date April 13, 1883, Dr. H. L. Hubbard, health officer, Morris, Stevens County, reports a case of small pox, J. M.:

"Returned from pineries near Aitkin ten days since. On ninth we were notified that he had the disease, and immediately removed him to the pest house and gave him proper attention. The boarding house where he was, has been quarantined and every precaution taken. All not recently vaccinated urged to be so protected; schools are closed for the present."

Secretary replied, April 14th:

"As you can prevent children from infected houses, from attending school, and have the power of quarantine, I advise you to open the schools to all *vaccinated* children. You will thus secure more vaccination and so better protection. Find out the camp the patient came from, date, if he was offered or accepted vaccination, what physician did it, and every fact to enable me to trace the responsibility. I send you circulars on small pox."

On April 20th, Dr. Hubbard replied:

"No more cases. The patient was "toting" in the woods for different parties; stopped in a hotel in Grand Rapids (where small pox had been), kept by J. Casey for W. B. & Co. of Aitkin; came to this place in company with one Thomas Church who had stopped at same hotel; while they journeyed in company he was broken out, April 22d."

No further report.

CHANHASSEN TOWNSHIP, CARVER CO., MINN.

SUMMARY.

First report:
  Date, April 21, 1883.
  Reporter, Dr. E. H. Lewis, Chaska.
  Number cases reported, one.
First case, young lady, A. W.
  Origin, Kramer's hotel, Minneapolis.
  Date attacked, April 16th.
  Date first visited by physician, April 21st.
  Died, April 24th.
Exposures to first case.
  April 14th, at a dance, forty-two persons, and visitors to family of patient.
Total during epidemic:
  Number quarantined, every one exposed.

Number of cases	2
Number of deaths	1
Number of families infected (quarantined)	1

  Health officer, Dr. E. H. Lewis.
  Attending physician, Dr. E. H. Lewis.

DETAILED ACCOUNT.

April 21st, 1883, Dr. E. H. Lewis writes from Chaska: "Have one case confluent small pox under treatment. Patient, a young lady on a visit from Minneapolis where no doubt she was exposed and contracted the disease. A large number of persons have been exposed by the visits around the neighborhood and attending a dance while she was having the primary fever at the time, besides other members of the family have intermingled freely, the nurse sleeping with the other children. I want some vaccine immediately. Have telegraphed Minneapolis and St. Paul without success. Send some or inform where it can be got, quick. Send copy of laws governing boards of health. It is next to impossible in the country to get boards to quarantine contagious disease."

Secretary replied on 24th, first by telegraph: "Have sent vaccine C. O. D. from Lambie & Bethune, St. Paul." And wrote: "Your note of 21st, mailed 22nd, reached me last night; better have telegraphed: 'One case variola; send vaccine and instructions.' As it is, valuable time has been lost. Have telegraphed and ordered virus and sent laws at earliest moment. Have instructed Dr. Dunn, of Shakopee, who has had large experience with me, to visit and co-operate with you. He will aid you in every way in his power. Of course the patient and family are quarantined and family vaccinated."

Same date secretary wrote to Dr. James H. Dunn, Shakopee: "Visit Chaska. See Dr. Lewis. Insist on immediate organization and operation of local board. Have Dr. Lewis appointed health officer, if he will serve. Make thorough investigation; first, of the origin of disease and number of cases; second, care of existing cases; third, have board quarantine all *suspected* persons till vaccination works or time tells the story. Report their action in detail, so that I can judge accurately of the present and future. Urge vaccination. Save and use humanized virus. Act as my deputy and as inspector for this board. I rely upon prompt and discreet action. Show this letter to Dr. Lewis and local board. See my letter to him and return Dr. Lewis' letter, which I enclose, to me with your report."

April 25th Dr. Dunn wrote: "Received your letter last night. Left early this morning for infected district at farm-house of Carl Waldvogle, seven miles from Chaska and from Shakopee, in township Chanhassen, and on border of Lake Township. Patient is a girl eighteen years of age with severe confluent small pox. In house are four others, two adults and boy and girl sixteen or seventeen years each. Never vaccinated till last Sunday. The girl returned from Minneapolis April 14th. The same evening she attended a country dance at a neighbor's, two miles off, where were forty-five persons. She felt bad at the dance and was next day confined to her bed. There appears to have been no subsequent exposure of neighbors, except the family of Mr. Kals, who reside one mile distant, in Lake Township, with seven children, one of whom staid two hours in the kitchen at Waldvogle, said house being in northeast corner of section 7, township Chanhassen, and Kals in Section 12, township Lake. Chairman of Chanhassen had already visited the case and declared no further expense necessary; but with assistance of county attorney brought him to time and had Dr. Lewis appointed health officer, also organized Lake Township board of health, and returned late this evening. To-morrow will visit and quarantine all who attended that dance, some of whom live in Hennepin County. Will report fully to-morrow or next day."

Review of facts:

Girl returned from Minneapolis April 14th.

Forty-five exposed by her at a dance on evening of fourteenth.

Patient visited by Dr. Lewis April 19th.

Reported to Dr. Hewitt on April 21st.

Kals' family exposed on April 23d.

Visited by Dr. Dunn of April 25th.

April 27th, following notice was served on Dr. Lewis: "Complaint has been made to village board of your action in taking charge of a case of small pox. In the interests of the community you are requested to stay out of town, or to use more precaution than you have done heretofore; complaint is pouring in from all quarters"—which complaint was forwarded to secretary by Dr. Dunn with following endorsement: "Doctor thinks the village of Chaska, not he, should be quarantined, as they have no health officer and the town is in bad sanitary condition. Will write you himself, so he says."

May 1st, Dr. Dunn reports: "No more cases of small pox to date; think we shall have no more trouble; will make final report in a few days.

May 6th, Dr. Dunn writes:

"Dr. Lewis reports to-day one new case at Waldvogle; both town boards discharged him on 30th ult. Nothing was heard from district till yesterday; the four inmates of the house were all vaccinated by Dr. L., and the vaccine worked well on the girl; she is believed to be fully protected; the boy has a mild varioloid; the old man and woman are probably safe, as the vaccination did not *work much*. He reports all his vaccination as doing well; it is very difficult to induce the neighbors to obey quarantine of the family; I have suggested arresting willful trespassers. I leave with the doctor for infected house at once; anticipate trouble in getting the local board to appoint a health officer again, as they fear expense, and believe that there is considerble humbug about the matter, as the boy is not sick abed; of course I will explain all, but please send me full orders and write a letter to chairman of town of Chanhassen, giving explicit orders to reappoint the health officer. The girl that died came from Kramer's hotel, 125 First Street North, Minneapolis, where she was working as a servant girl. It is reported that the place had been quarantined and that she had been told by a physician that she had small pox, but was allowed to travel home. She is said to have nursed a mother and child sick with variola in the hotel.

Do you think it necessary to keep a physician at the infected house night and day?"

Diary:

April 26th, girl died.

April 26th, vaccination of boy and girl began to work.

April 30th, health officer discharged by local board.

May 5th, varioloid case reported by Dr. Lewis; vesicles already filling; went to bed on May 3d.

May 6th, Drs. Dunn and Lewis start for Waldvogle's again.

May 7th, secretary wrote to E. J. Vogel, chairman town supervisors, Chanhassen:

"Am informed by Dr. Dunn, inspector of this board, that your board has dissolved as a local board while there are persons sick with varioloid in your town and others likely to be taken sick. I am instructed by this board to instruct you to act as a board of health, and employ a physician as health officer, until all danger of small pox or varioloid has passed. You will please act promptly, and not discharge health officer until you have reported your intention to this board. Instruct him to report to this office twice a week."

And to Dr. Dunn same date:

"Have written this mail to Mr. Vogel. Show any one who objects the law, and explain the penalty. As you go around get the vaccine history of all exposed that night to that girl. This series of facts is too important to lose; be careful and accurate in every case; *see* the scars, and *note their number* and *character*.

May 12th, Dr. Dunn reports:

"Nothing new; shall have no more trouble with small pox. Chairman of local board of Chanhassen writes me to see to the cleaning up, which I shall do a week from now."

DR. J. H. DUNN'S REPORT ON SMALL POX IN CHANHASSEN TOWNSHIP, CARVER COUNTY.

SHAKOPEE, June 1, 1883.

DEAR SIR: I inclose herewith a sketch of the variola cases, as per agreement.

Yours, sincerely,

JAMES H. DUNN.

To Dr. C. H. Hewitt, Secretary State Board of Health, Red Wing,

THE HISTORY OF A CASE OF VARIOLA OCCURRING IN CHANHASSEN TOWNSHIP, CARVER COUNTY.

April 14, 1883, Agusta Waldvogle, a German girl, aged eighteen, left Kramers Hotel in Minneapolis, where she had been employed as a servant, and went to her father's house, in section seven, Chanhassen Township, seven miles from Chaska, for the purpose of getting married. It is reported that the hotel had been quarantined by the health officer of Minneapolis; that a lumberman boarder had been removed to the pest house; that a child which Augusta cared for had died of some disease, and that its mother had been sick of some mild disease, probably varioloid. The hotel had been reopened before the girl left it.

She arrived at home on the evening of the fourteenth, and on the following evening, the fifteenth, attended a dance given by a neighbor in honor of her return and approaching wedding, at which forty-two persons were present in a house of two small rooms, the largest about 12x20 feet. She felt indisposed while at the dance, was noticed to be very red in the face, and unable to dance a great deal. On her return home in the morning, the sixteenth, she took to the bed, and the rash appeared. April 21st, Dr. E. H. Lewis, of Chaska, was called, and diagnosed confluent variola; quarantined the family, ordered fresh vaccine virus, and notified the State Board of Health. On the twenty-second he vaccinated the four remaining members of the family with bovine virus, and on the twenty-third I visited the infected district with Dr. Lewis, by order of the secretary of the State board. We at once visited, quarantined and vaccinated every one who had been exposed. On the twenty-fourth, Augusta died. There were four members of the Waldvogle family, as follows: Mr. Waldvogle, aged fifty, who had been vaccinated years before, and was revaccinated on the twenty-second, but it did not work, and who escaped the disease; his mother, aged seventy, never vaccinated, in whom the vaccination of the twenty-second did not succeed, and who also escaped; his son, aged seventeen, first successfully vaccinated on the twenty-second, and a daughter, aged sixteen, also first vaccinated successfully on the same date. May 1st the son was attacked with varioloid, having pretty sharp primary fever, confining him to bed for two days. He had a slight eruption, which mostly aborted in the vesicular stage. He was around as usual after the second day. The girl, not at all confined to bed, had some headache and slight fever at about the same time, with about a dozen papules, which never matured. May 21st the premises were cleansed and disinfected by my brother, Dr. J. B. Dunn, and the quarantine removed.

Of the forty-two attendants at the dance five were children of the host, of from two to eleven years of age, two of whom had been vaccinated one year previously. The others were young people of from eighteen to twenty-eight years of age, most of whom had never been vaccinated. No one present at the dance contracted the disease.

I took much pains to investigate the case from the remarkable opportunity here offered to test the contagiousness of variola during the first day of the primary fever from which the girl was suffering at the time of exposure.

While most authors teach the non-contagiousness of variola previous to the full appearance of the eruption, some even claiming no danger of contagion until the full formed vesicles are about to become pustular, others report cases of infection during the stage of incubation. The point is one of much importance to health officers, for if the latter view be correct, every one exposed to a case even during incubation should be quarantined; while if the other be the case, it will be sufficient to keep keep watch of those who have been exposed after the vesicular stage; and doubtful cases may be coolly watched until the diagnosis is perfectly plain. This unique case of the exposure of forty-two persons, five of whom were protected by vaccination, under the most favorable circumstances for infection, would seem to show that contagion is not probable up till the appearance of the eruption even during the primary fever.

Now occurred a rather unaccountable circumstance. May 19th Dr. L. discovered a case of varioloid in Chaska, in the four-year old daughter of a German laborer. The girl had four vaccination marks upon her arm, but the primary fever was pretty sharp for two or three days and quite a copious eruption appeared scattered over the body, some fifty or sixty vesicles. I saw her May 30th, while there were yet some traces of the exfoliated scabs. There will be a few small pits.

It was now learned that the laborer and family had moved to Chaska from the farm of Mr. Oberlie in section thirty-four, Lake Township, some six miles distant, and about seven miles from Waldvogle's, on the 22d of April; also, that a son of Mr. Oberlie was at the dance on the fifteenth.

The most painstaking investigation fails to trace any other exposure than this very indirect one to variola. I can offer no theory to account for the facts. If young Oberlie brought the infection in his clothing from the dance it must have remained dormant for some days, for the girl was not attacked for four weeks after the dance: nor did other less protected persons contract it.

The expenses to the town of Chanhassen were: Health officer's salary, from April 21st to May 21st, $141; printing, $3; total, $144.

To Chaska Village: Health officer's salary, fourteen days, $70.

WABASHA, WABASHA COUNTY.

SUMMARY.

First report.
  Date (telegram), April 25, 1883.
  Reporter, Dr. Milligan, Wabasha.
  Number of cases, one.
  Date (letter), April 25, 1883.
  Reporter, Dr. Low, health officer.
  Number of cases, one (quarantined).
First case, child of Mr. C.
  Origin, uncertain; probably Wisconsin (railroad hands).
  Died, April 29th.
Totals for the epidemic:

Number of cases	5
Number of deaths	1
Number of families infected (quarantined)	1

  Health officer, Dr. Low.
  Last report, May 12th.

DETAILED ACCOUNT.

April 25, 1883, Dr. Milligan, Wabasha, reported by telegraph:

"One case of small pox. If you come, call on Dr. Low, health officer."

Same date, Dr. Low, health officer, wrote:

"Case of variola; Doctors Milligan and Van Dyke agree with me as to its character. Rigid quarantine established; wish you would see the case; telegraph.

April 26th Dr. Milligan telegraphed:

"Better come down; much excitement."

Secretary went down on 2 P. M. freight train and found a child in a laborer's family, who keep boarders among railroad employes, sick with confluent small pox; origin of the disease uncertain; probabilities in favor of Wisconsin origin. Secretary found strong popular disbelief in the existence of the disease, and opposition to the work of the local board. Confirmed the diagnosis of the local board and gave local authorities notice of the existence of the disease, and of the duties to be performed.

May 10th, secretary received a latter from Dr. Milligan as to the precautions to be taken in clearing up the persons and property of the infected family.

May 11th, secretary wrote to health officer:

"Report immediately the following details:

1st. Quarantine of persons exposed.

2d. Disinfection of house, clothing, bedding, etc.

"3d. If anything infected has been destroyed, you can, under section 12, law of last winter, allow compensation therefor. I trust you have seen the last of this outbreak; that the disinfection has been so complete that no new outbreak is possible."

Under date of May 11th Dr. Low replied: "Little patient you saw with me died morning of twenty-ninth, eleventh day of disease; was buried immediately by a man who had had small pox; parents not allowed to accompany corpse to grave. No cases outside this house; two of the inmates have varioloid and two variola; two last had been vaccinated and vaccine pustule was forming when they took sick with variola. There is still another to be sick, probably varioloid. Have advised the father, when the sick recover, to burn the old carpets, clothing and bedding, fumigate, whitewash and paper the rooms; make a clean job and start anew. This to prevent the possibility of the disease spreading beyond this house. Dr. Lincoln advises him that boiling is all that is required; no necessity of burning anything. I think it would be dangerous to allow this old material to be preserved. If it is burned, the city will have to help pay for it, as Mr. C. will be buried in debt by this sickness. I hope the State board will instruct the local board to attend to this matter."

May 12th the secretary replied: "Local board have the power, if in their judgment necessary, to destroy any infected thing and pay for it. Second, as to clothing, bedding, etc, clothing can be disinfected and then washed, and so the virus destroyed. Feather beds and pillows better burn; but blankets, quilts and carpets can be thoroughly disinfected, though often with loss of color, by sulphur fumigation, and subsequent aeration and washing in boiling water. Throw entire responsibility in the matter upon the health officer, give him all the assistance in your power and hold board responsible."

May 12th, Dr. Low, health officer, replied: "Rest of family mostly through with varioloid. The children have the small pox, but not the confluent. No cases outside the house. Expect to keep it where it is."

BRAINERD.

SUMMARY.

I. Outbreak.
  Origin, lumber camps.
  Date, February 8–14.
  Number of cases, one. Quarantined.
  Reported by mayor of Brainerd.
  Number of cases (later) not given.

II. Outbreak.
  Origin, Duluth.
  Date, April 27–30.
  Number of cases, one. Quarantined.
  First reported by Dr. J. C. Rosser.
  Health officer, J. R. Howes.
  Number of cases (later) not given.

DETAILED ACCOUNT.

I. Outbreak.

Under date Feb. 8, 1883, a petition to State Board of Health was forwarded, asking for removal of pest house outside of city limits, stating that there was one case of small pox in the pest house at that time.

Feb. 12, 1883, secretary telegraphed mayor of Brainerd: "Petition just received from two hundred and seventy-five citizens, with letter from Mr. Cross, complaining of location of your pest house. Send plat of location with explanations by next mail. Telegraph daily the uumber in pest house and in quarantine."

Under same date (Feb. 12) mayor of Brainerd wrote: "Our pest house is down near river, in thinly settled portion of city. I give you the nearest houses to it; I have measured the distance myself. (A plat inclosed with distances from pest house to nearest houses marked. From pest to nearest houses, 165. 200, 300 and 400 feet, respectively.) We have only one case small pox in pest house or in town, and none in quarantine."

Feb. 14, 1883, secretary telegraphed mayor or health officer of Brainerd: "Report by telegraph daily number of men in hospital and in quarantine. Answer."

February 14th, mayor of Brainerd telegraphed: "One man in pest house; not any in quarantine."

II. Outbreak.

April 27th, Dr. J. C. Rosser telegraphed from Brainerd:

"One of our citizens who has been in Duluth and returned fourteen days since, has confluent small pox. My attention was just called to it this morning; he was in charge of another doctor."

Same date, secretary telegraphed Dr. Rosser:

"Health officer Brainerd, report by telegraph."

Under date April 30th, Dr. J. R. Howes, Brainerd, writes:

"Have been appointed health officer for one year. . . . We have one case of small pox; a man, Thomas Congden, taken sick at Duluth and brought to his home in this city. Disease diagnosed three days after getting home; several people exposed; house quarantined, and exposed vaccinated."

No more cases.

DOLLYMOUNT, TRAVERSE COUNTY, MINN.

SUMMARY.

First report.

Date (of writing), May 8, 1883; received, May 10, 1883.

Reporter, Dr. Wm. F. Holden, residence Herman, Grant County.

Number of cases, seven.

Number of families, two; viz.:
P. S., four cases.
Mrs. D., three cases.
Number of exposed, three families.
Number of quarantined, five families.
First case, P. S.
Place of exposure, Minneapolis or Long Lake.(?)
Date of first case, *not given.*
Date of last case, June 8th prox.
Number of cases, thirteen.
Number of deaths, two.
Quarantine removed, June 22d.
Health officer, Dr. Wm. F. Holden.
Attending physician, Dr. Wm. F. Holden.
Later exposures, at least one family.

DETAILED ACCOUNT.

Under date May 8th, Dr. Wm. F. Holden, chairman local board of health, Herman, Minn., wrote following details, received at office of board at 3:30 P. M. on 10th:

"Yesterday (7th) was ordered to investigate a report of small pox in Dollymount, Traverse County, by supervisors of that town and by village board of health, Herman. Dr. Randall, of Graceville, Minn., had reported three cases to local board of Dollymount, and left the matter with them. I found seven in all, four at Peter Schmitz's and three at Mrs. Doll's, all in town of Dollymount. At Schmitz's there is one case about well, scabs falling off; another case in pustular stage, and two more just coming down with varioloid, they alone having been vaccinated. At Mrs Doll's there is one case just coming down, another in pustular stage, another more advanced and of malignant form. Three families in neighborhood have been exposed by visiting the infected families at different times. I advised the local board to quarantine the five houses. The local board are at a loss what to do, and our village board, newly elected, desire instructions from you, and will take steps necessary to protect ourselves."

Secretary answered immediately, May 10th: "Instruct local board, Dollymount, to appoint a physician as health officer to care for the sick with variola, and to quarantine suspected families; telegraph action, write details. Vaccine next train, C. O. D.

And to Dr. Randall, Graceville, same date:

"How many cases variola in Dollymount? Who is in charge? Answer promptly.

Same date (10th) secretary wrote Dollymount board of supervisors: "Under May 8th, Dr. Holden reports seven cases of small pox, one nearly well. You have no one but yourselves to blame if the disease spreads, after so long neglect. Go to work promptly now.

"I. Appoint a physician as health officer, to stay with and watch the sick; he need not live in the same house, but should be near by.

"II. Instruct him to quarantine thoroughly all persons and families who have been exposed to the disease, and to vaccinate all such persons immediately.

"III. Offer vaccination to all in the infected district who will accept it free, if they will not pay for it.

"IV. Insist on the immediate vaccination of all children going to school.

"V. Persuade all persons, not yet vaccinated, to accept it.

"VI. Instruct your health officer to keep a sharp lookout for new cases, and to care for them.

"VII. The usual fee paid to a physician giving his whole time to this business is ten dollars ($10) a day and expenses. Allow that; your expenses, necessary to control this disease, will be paid according to law by the county (see Sec. 29, Chap. 132, laws 1883), but your board pay them first.

"VIII. This board will give you every assistance, will select a health officer for you if you cannot get one in your county, which last would be better.

"Instruct your health officer to find where the disease came from, and to report immediately to me.

"Instruct him further to report regularly twice a week by mail, by telegraph if need be."

May 12th, local board of Dollymount report election of Dr. Holden as health officer, and strict compliance with suggestions of secretary.

May 11th, Dr. Holden telegraphed from Herman: "Local board of Dollymount has appointed me health officer, and quarantined the five families. One of Dolls dead. Shall see them to-morrow and report by letter."

May 14th, chairman local board of health of Dollymount further adds: "There have been ten cases of small pox up to date;

two have died, one has fully recovered and two more are recovering. Instructions fully carried out and health officer required to give his full attention to the sick, and to reside within convenient distance of infected district. Have an officer in charge of supplies. Quarantine very strict."

This was in answer to a telegram from secretary of State board of same date: "Your board must take charge of sick and supplies. Health officer must live in Dollymount while in charge of the outbreak."

Same was telegraphed to health officer.

Under date of 15th, health officer of Dollymount writes: "Am going into camp and board myself. Another family exposed in town of Crook, which joins Dollymount, to which one of the Doll girls had returned after being home. She was taken sick and after three days broke out, when she was brought back home again. I drove over and notified the town board of Crook to quarantine the family and employ physician. The country exposed now is about four miles wide. The above case is the only exposure which has occurred since I was here, and all families exposed or infected are strictly quarantined. Now there are some families exposed and quarantined who have gone for two weeks since exposure. When can I remove quarantine from such families, and must I disinfect the houses? Give me instructions for disinfecting, etc. They will obey an order from you quicker than from me, and without any trouble."

Under date of May 17th, Dr. Holden writes: "In the Schmytz family Mr. Schmytz, the first case, had been to Minneapolis on a visit, and thinks he contracted the disease on the train or in that city;" asks particular directions as to raising quarantine of infected families.

In answer to Holden's letters of 15th and 17th, secretary replied: "Town board should secure a place for you to lodge. If any family is convalescent, I would lodge there after disinfection. Of course the board pays your expenses. Release all families quarantined, in which no cases have occurred, on fifteenth day after last exposure. In families where a case has recovered, and vaccination has worked well in the other members, you may release from quarantine a week after patient has gotten rid of last scabs, provided a thorough disinfection of persons, clothing and things was had. Disinfect as directed in circulars numbers one and two inclosed. Better destroy feather beds and pillows by fire; not possible to disinfect with means at your disposal."

May 16th, secretary wrote to chairman board of supervisors of town of Crook, Traverse County, of information contained in Dr. Holden's letter of May 15th, advised to elect Dr. Holden their health officer.

May 19th, wrote to chairman board of health of Dollymount: "You will find it economy to make arrangements to pay the nurses and doctor promptly; you will get better service and more satisfactory work."

May 19th, Dr. Holden writes:

"Yours of the 16th at hand. Rules will be followed to the letter. Am living in a little eight-foot square shanty covered with tar paper, hauled here. Cool and rainy. Think if I had $20 per day it would not be any too much."

Chairman board of health of Dollymount writes (Herman, May 22d):

"Small pox disappearing; only two cases remain and they recovering. On the score of expense, the board want to know what further steps are to be taken and how long they will need to retain the services of the doctor. Can we force the person who knowingly brought the disease into our town to indemnify the town in part?"

May 23d, secretary answered:

"As soon as health officer is satisfied that no more cases can occur he might go home, visiting the remaining sick as necessary. You must insist upon thorough disinfection of clothing, bedding, etc., before infected houses are opened to visitors or infected patients allowed to go out. Instruct health officer to report exact facts to me and I will advise him. May 18th you telegraphed for thirty points vaccine. I ordered sent C. O. D., as heretofore. Now comes notice you decline to take it from office from lack of $3 necessary to pay for it. I cannot explain such conduct. Of course you will take it; the sooner you do so and use it the better. Notified Lambie & Bethune by telegraph to collect the bill."

Under date 23d, Dr. Holden states:

"Am disinfecting and discharging families as fast as possible. I take but three days to disinfect the house from cellar to garret, move everything out of the house but the stoves, then sprinkle walls, ceilings, floors, windows and doors with a solution of carbolic acid; also use chloride of lime. Then I scrub, whitewash and sprinkle again, and order carbolic acid in the house for the next thirty days; burn the feathers and boil all clothes. What do you think of my way of disinfecting? Also throw copperas about the yard."

In reply, May 24th, secretary wrote:

"Follow the directions sent to you for disinfection of persons and clothing. The use of sulphurous acid is there directed. Those directions can be carried out in forty-eight hours. These things thoroughly done there is no use to wash down the walls and floors with carbolic acid nor to scatter copperas in the yard. Make as little trouble to families as is consistent with safety. No use of carbolic acid in house after directions of circular are thoroughly carried out."

May 25th, Dr. Holden, from Dollymount, writes:

"To-day the board drove to my office and gave me your letter of the 23d with instructions to report. No new cases; the sick are convalescent. Three houses have been disinfected with sulphur, as directed. Burned feathers, bedding and clothes of patient. Very particular in disinfecting. But three families left to be disinfected. There is such an amount of feathers at Schmytz and Doll's the board have concluded to try to save them. Quarantine is raised in the town of Crook.

The first case was in Plymouth, Hennepin County, four weeks before coming home, and during that time was in Minneapolis but once—the day before election. Took the train at Long Lake and was home about two weeks before he came down.

May 28th, Dr Holden writes:

"All old patients up and nearly well. Two new cases of varioloid have occurred in one of infected houses. I had vaccinated them, and the disease is very light. The variola is evidently not yet out of the exposed district. Three families are quarantined now. If a week after the scabbing is over in the patients at Rinke's, and Rinke, who has been repeatedly vaccinated and is the only one of the family who has not had small pox, shall I release the family?"

Secretary answered, June 1st:

"Report at hand. After the scabs have been cleaned off and the patient has had a good bath every day for a week, including the scalp and head, you can discharge him after disinfection as usual. Treat varioloid exactly as small pox. It is as dangerous to others.

June 2d, Dr. Holden replied: "No more new cases. I think we have seen our last."

June 8th, Dr. Holden writes: "One of the convalescents at

Rinke's took cold from exposure, and I fear will die. But two families remain in quarantine."

Under date of June 22d Dr. Holden reports: "I released the last family at Dollymount yesterday. Have repeatedly failed in attempt to vaccinate the infant born in the Schmytz family since the disease appeared there, and wish some 'eighth day lymph.'"

Secretary replied: "I send you the lymph asked for. Please give me full details of its operation."

ST. MICHAELS, FRANKFORT TOWNSHIP, WRIGHT COUNTY, MINN., AND OTHER OUTBREAKS ORIGINATING THERE.

SUMMARY.

First report (telegram):
Date, May 24, 1883.
Reporter, Dr. N. J. Pinault, Osseo, Minn.
Number of cases..17

(May 25th, several telegrams, from Drs. Hand, St. Paul; Scoboria, Elk River, and Mr. Stephen Schumacher, report small pox in varying number of cases at St. Michaels.)

First case, servant girl in family of F. A.:
Taken sick, May 2d.
May 4th, diagnosed rubeola by physician from Monticello.
Died, May 11th.
Declared variola by physician from Buffalo, May 11th.
Origin, unknown.

Total for epidemic:
Number of cases..59
Number of deaths.. 6
Number of houses infected..17
July 19th, all quarantine raised.

GREENWOOD TOWNSHIP, HENNEPIN COUNTY.

First report:
Date, June 5th, 1883.
Reporter, chairman board.
Number of cases.. 1

Health officer, Dr. Fassett. (He claims he was not made health officer.)

Origin, St. Michaels.

JUNE 19TH, FINAL REPORT.

Total for epidemic:

Number of cases	1
Number of deaths	0
Number of families infected (quarantined)	1

ELK RIVER, SHERBURNE COUNTY.

First report:
- Date, June 1st.
- Reporter, Dr. Whittimore.
- Number of cases (quarantined) 1

First case:
- Taken sick, ———
- Died, June 10th.
- Origin, St. Michaels.

Total for epidemic:

Number of cases	1
Number of deaths	1

Health officer, Dr. Whittimore.

CORCORAN, HENNEPIN COUNTY.

First report:
- Date, June 4th, 1883.
- Reporter, Dr. Pinault.
- Number of cases, not given.
- To June 25th, four cases in one family.

Total for epidemic:

Number of cases	6
Number of deaths	0
Families infected	1

FINAL REPORT, JUNE 30TH.

Quarantine raised, June 30th.

Origin, not given (probably St. Michaels).

HASSAN, HENNEPIN COUNTY.

First report:
  Date, May 29th, 1883.
  Reporter, Dr. Scoboria.
  Number of cases, not given.
Total for epidemic:

Number of cases	1
Number of deaths	1

No spread.
  First case, in family of J. H.
  Patient, Miss Annie H.
Quarantined.
  Origin, St. Michaels.

OTSEGO, WRIGHT COUNTY.

First report:

Date	May 29th
Reporter	Dr. Scoboria, Elk River
Number of cases	Not given
Health officer	Dr. Scoboria
Origin	St. Michaels

First cases:
  Two families; P. D. and J. S.

First visited by physician	May 28th
First attacked	May 23d
Number of cases	8
Number of deaths	0
Families infected	2
Quarantine raised	July 14th

DAYTON, WRIGHT COUNTY.

First report:
  Date, May 29, 1883.
  Reporter, Dr. Scoboria.
  Number of cases, not given.
  Health officer, Dr. Scoboria.

Later report by Dr. Scoboria announces the above rumor false.

Number of cases, none.

Number of deaths, none.

ST. MICHAELS, FRANKFORT TOWNSHIP.

DETAILED ACCOUNT.

May 24th, 11:30 A. M., telegram from Dr. N. J. Pinault:

"Seventeen cases variola at St. Michaels; any particular instructions? Many refuse vaccination; sick doing well, except one."

Secretary telegraphed reply same date:

"Dr. Leonard will visit; write immediately full details."

And telegraphed Dr. W. H. Leonard, member of State Board of Health, Minneapolis:

"Seventeen cases of variola at Osseo. Please visit, get history, and management. Telegraph and write."

Wrote to Dr. Pinault same date:

"Who are the board of health? Why not reported before? Who is health officer? Give full details of origin of disease, families infected and care taken of sick and suspected. Dr. Leonard will visit St. Michaels with you and advise for board."

Under date May 25th, Dr. Hand, St. Paul, telegraphs rumor of twenty-five cases and two deaths of small pox at St. Michaels.

Dr. Leonard telegraphs:

"Will attend to matter at once."

Dr. Scoboria, Elk River, telegraphs same facts as Dr. Pinault: "Will investigate and write."

Stephen Schumacher, chairman town board of Frankfort (in which is St. Michaels), telegraphs:

"Twenty-five cases small pox in Frankfort; come at once to St. Michaels."

Secretary answered:

"Am taking necessary steps; Dr. Leonard of this board there to-day; notified local board of Dayton Township of small pox and asked them to co-operate."

Dr. Pinault reports under date twenty-fifth:

"First case in St. Michaels occurred in family Frank A., a merchant, in a servant girl; diagnosed by physicians as rubeola (measles). Girl died on the eleventh. People believed it a case of black measles and visited her and the store freely. On twenty-first, visiting another patient, I was called by Mr. A. to see a sick servant girl; I diagnosed the case variola; now (25th), Mr. A. has seven children sick with small pox. Mrs. H., half a mile from A., has varioloid; J. V. has varioloid; his wife died last night of hæmorrhagic small pox; two sons, twenty and twenty-three years, have semi-confluent; Jake W.'s wife has varioloid; M. N.'s wife, varioloid; two young boys, semi-confluent.

"Have offered vaccination; many are more afraid of it than of small pox. I fear that within two weeks there will be many more cases. Mr. A. has quarantined his premises (store and house), and the ordinary precautions are pretty well carried out." Seventeen cases up to date and two deaths.

Dr. Leonard, under date twenty-fifth, wrote:

"Have visited Osseo; seen Dr. Pinault, who has written you; shall hear from him again to-night, and, if need be, will go to St. Michaels."

Dr. Scoboria, Elk River, under date 24th, reports a visit to St. Michaels:

"A.'s establishment is general store, saloon and lodging house. First case was seen by a physician from Monticello, who made two visits and called it black measles. Subsequently physicians from Buffalo pronounced it small pox. Patient died May 11th; ninth day of her illness. Dr. Pinault, in charge of cases, has vaccinated a good many. I was obliged to beg the privilege of vaccinating four unvaccinated children in house of J. F., where I found five persons sick with small pox. Houses are quarantined because no one visits them. Supervisors taking no action. Many people must have been exposed to the first case. I was confident from general aspect of things that you had not been notified. They are hauling wheat to our mill; but town board are looking after the matter."

Dr. Cady, health officer, Buffalo, reports seeing first case May 7th; sick in upper room over large store owned by F. T. A. Physician previously in attendance had declared it "black measles." I ordered house to be shut and every precaution taken, which Mr. A. promised to do. Wrote to local board of health the facts in the case. The town of Buffalo organized a local board of health, shut court house thirty days, placed guards on three principal roads from St. Michaels and stopped communication.

Dr. Gibbs, Monticello, who first saw first case, writes:

"I saw her May 4th. Cough, fever, pain in back; no eruption. Pain in back referred to other causes, headache, etc. Saw her again on the 6th, because of the marked change in her appearance. This was the first day of the eruption, and as she had a cough did not hesitate to call it measles. Told friends it must be measles, unless small pox, but the last scarcely thought of by friends or attendant because of no known exposure. I was particularly requested not to visit again on plea of poverty unless called for. I enjoined the friends to notify me of any change in the case and left. I know nothing further of the case."

May 27th, Dr. Pinault, under date 26th, reports:

"Am not health officer St. Michaels. They have shut the school and the church. First case was buried privately. The sick have good care now."

Dr. Leonard, under same date wrote:

"I go to Elk River to-night. Town of Dayton will probably appoint Dr. Scoboria health officer."

Dr. Leonard, under date 29th, wrote:

"Just returned from Elk River. Went over towns of Otsego, Dayton and St. Michaels with Dr. Scoboria. The matter is bad enough and will probably be worse; twenty cases now, three deaths in one family where disease first appeared. First case taken May 2d; physician from Monticello saw her second day of disease, called it measles; saw her three times, and last time May 6th, still thought it measles; a physician from Buffalo called on 7th, and declared it bad case measles; on third visit on 11th with partner, declared it variola. Patient died the same night. No public notice was given of disease until other cases broke out. No satisfactory origin ascertained ; girl lived there, had not been away; none of friends can give satisfactory evidence of exposure. All roads between St. Michaels and Mississippi River blocked up. The priest too indifferent about vaccination; said he should oppose it, but leave the people free to do as they thought best. Shall send vaccine to Dr. Scoboria to-night; think he will succeed in vaccinating many."

Dr. Pinault, under date May 26th, reports his "appointment as health officer of St. Michaels. Twenty-six cases; five recovered; three deaths; nine under treatment; one doubtful case in town of Hassan, quarantined."

Under date May 28th, Dr. Scoboria telegraphs, urging secretary of State board to come up and assist. Secretary went into infected district from Osseo with Dr. Pinault. Called together local board of St. Michaels, and insisted upon their prompt and active support of Dr. Pinault as health officer, and with difficulty secured the partial co-operation of the priest. Visited personally the leading citizens and members of boards of health of this and adjoining towns, and on the evening of the second day went through town of Otsego, advised with their board, and then to Elk River. Found a widespread opposition to vaccination among the German population, but succeeded in securing the co-operation of many leading citizens, and increased activity by local boards of health.

Under date, June 4th, Dr. Pinault reports: "Much less opposition to vaccination since the visit of the secretary. Stricter quarantine and more general co-operation. A guard appointed by local board has been on duty since thirtieth of May. Six new cases have appeared in houses already infected. We have now sixteen houses quarantined. Eighteen cases are recovered; nineteen are still under treatment, of whom eight confluent; in all, forty-two cases and five deaths. Quarantine will be raised on six houses next week. No new cases in Hassan Township. One in Corcoran Township, Hennepin County, quarantined."

Under date of May 31st, local board of health, town of Frankfort, (St. Michael's), in reply to secretary of the State Board report reasons for delay in attending to small pox: "Received no notice of the case; but two days after death on 11th (May 13th), the clerk inquired of her brother, who stated that the attending physicians disagreed. On the 15th May, two supervisors asked the Catholic priest. Said he could not determine. Made same reply on the 18th to another supervisor. The board, living some distance from St. Michaels, received no serious report until the afternoon of the 24th, when Dr. Scoboria notified the chairman of two families infected with small pox. On the 25th, when about to call the board together, Dr. Gibbs, of Monticello, advised him to send to secretary of State Board of Health for instructions. On the 27th, the board appointed Dr. Pinault health officer, and on the 28th posted instructions according to law. On the 30th, the board met the secretary of State Board of Health, Dr. Hewitt, and received full instructions. In the opinion of the board, the cause of the spread of the disease was that the first patient was visited by many relatives and acquaintances during her sickness, and others attending in dressing the corpse and putting it into the coffin, without having any idea that it was small pox.

Under date May 29th Dr. Scoboria reports visit of Dr. Leonard and himself to Otsego, Frankfort and Dayton:

"Towns practically quarantined but vaccination very slow. Cases in Otsego, Hassan and Dayton. Advised closing of church at Dayton."

Under date May 31st secretary received notice of organization of local board of health of Buffalo, and request for instructions and regulations.

In answer to letter from secretary ordering them to quarantine and vaccinate, the local board of health of Rockford, Hennepin County, replied:

"Will quarantine roads leading from St. Michaels, but conclude not to vaccinate."

In reply, June 4th, secretary served copy of circular on small pox, and of chap. 132, Gen. Laws of Minnesota, 1883, copies of which had been left with the clerk when secretary met him. Instructed board "to employ competent physician and direct him to offer vaccination to every man, woman and child in township, beginning with section nearest St. Michaels. Dr. Pinault, health officer of St. Michaels, Dr. Scoboria, health officer of Otsego, and Dr. Cady, health officer of Buffalo, instructed to serve you in this capacity if you desire."

Under date June 8th, town clerk of Rockford, replied:

"Letter and one hundred circulars received. Vaccination is being done as fast as the points can be procured. Dr. Fassett is using from seven to ten dollars worth of points daily, town paying for all not able to do so."

Under date June 9th, one hundred more small pox circulars sent.

Under date May 30th, Dr. Scoboria reports himself "vaccinating in Otsego and Dayton; is health officer of Otsego; Dayton made no appointment. Both keeping sharp lookout."

Under date May 31st, after consultation with secretary, Dr. Scoboria began vaccinating in southwest section of Otsego; "vaccinated forty-six out of sixty-four persons visited; finish town in two days and then go to St. Michaels and Rockford. One suspected family quarantined because of refusal to accept vaccination."

Under date June 1st, Dr. Whittimore, health officer of Elk River, reports: "One case of variola in quarantine; more feared."

Under date June 2d, Dr. Whittimore, Elk River, applied for humanized virus, which was forwarded through Dr. Hand, St. Paul.

Dr. Whittimore, June 10th, Elk River, gives notice of "death of one case reported; no other cases."

And he further reports, June 15th: "This case contracted variola at St. Michaels; fifteen days having occurred since the occurence of the case I have raised the quarantine, and call attention to danger from wheat brought from St. Michaels" (for which see letter of secretary to Dr. Pinault, June 16th).

Same date (June 2d), Dr. Scoboria reports: "Vaccination proceeding rapidly and without opposition; nearly completed in Otsego."

Under date June 5th, Hon. T. C. Mealy, Monticello, gives official notice of "organization of local board of health of Monticello, and in accordance with instructions received from State Board of Health, had Doctors Gibbs and Wakefield begin systematic vaccination of the population in section adjoining Frankfort, and established a guard on road from same place refusing passage to anyone not having a pass from Dr. Pinault."

The instruction from secretary of this board, given to Dr. Cady, health officer of town of Buffalo, under date June 4th, will serve to illustrate the advice given during the outbreak to all boards. "Calling attention to Chapter 132, General Laws 1883, and circular No. 1 of this board sent to you from this office, I suggest: First, systematic offer of vaccination and revaccination to every man, woman and child in the township, beginning with section nearest infected district, (St. Michaels), going from section to section, keeping accurate record of all who accept or refuse, working as speedily as is consistent with thoroughness. Board will save money and time by making this offer free where any objection is raised on score of expense, as affording the surest guard against infection and an indication as to where the disease will strike should it appear.

"On the ninth day after vaccination go the ground over again; note successes and failures, and if in your judgment necessary, repeat the operation. One hundred circulars on small pox included for general distribution; more at your service if needed. Suggest that your board meet twice a week during the outbreak, and that your written report of vaccination and other official work be immediately forwarded to this office. Notify this board in quickest way if the disease appears in your district."

Under date June 4th, official notice received of the action of the county commissioners respecting the disease, including resolutions passed at the meeting, one of which called the attention of the State Board to the fact that the infected district was not sufficiently quarantined.

"A special meeting of the Board of County Commissioners was held intheir room at the court house in Buffalo, May 30, 1883.

Members present: M. O'Loughlin, first district; A. W. Hoar, second district; Wm. Ziebarth, third district; Jos. Bland, fourth district; A. P. Peterson, fifth district, chairman.

On motion the following preamble and resolution was adopted:

WHEREAS, Small pox exists at St. Michaels, in the town of Frankfort, Wright County, Minn., and believing that the public welfare and safety of the citizens of Wright County demand that strict rules and regulations be enforced to prevent the spread of the same, through communication and transaction of business at the court house of Wright County; therefore be it

Resolved, That any and all persons residing in the immediate vicinity where small pox is known to exist, are requested not to visit the court house at any time during thirty days from June 1, 1883.

Resolved, further, by the Board of County Commissioners of Wright County, That we call the attention of the supervisors of the different towns in this county to acts numbers 97 and 112 of Session Laws of 1883, relating to contagious diseases, and we especially urge upon the supervisors of the towns of Frankfort, Monticello, Otsego, Buffalo, Rockford and Maple Lake, to immediately appoint a local board of health, if they have not already done so; the said board of health to guard against the spread of this disease. Be it further

Resolved, That the offices of the county of Wright, at the court house in Buffalo, be closed by the proper authorities twenty days, commencing June 1, 1883.

Resolved, That in view of the imminent danger of the rapid spread of small pox throughout the town of Frankfort and the adjoining towns in Wright County, that we especially call the attention of the State Board of Health to the fact, and especially to the fact of its not being sufficiently quarantined, and we ask that stringent rules be made and proper steps be taken without delay to prevent persons from leaving or entering the infected district.

Resolved, further, That this resolution be published in all of the newspapers in the county for three weeks, and a copy forwarded to State Board of Health, and also a copy to each town clerk of the several towns of the county.

Resolved, That the action of the auditor in calling a special meeting of board of county commissioners to take action in preventing the spread of small pox be approved.

On motion the board adjourned.

Attest: A. P. PETERSON, Chairman.

J. N. STACY, Auditor.

Under same date, June 4th, secretary replied: "Before your board met I had personally visited the infected district, met the local boards of health and secured the election of competent health officers. I suggest that you modify the first resolution by admitting persons bringing the certificate of health officers that they have not been exposed to small pox since the outbreak. As to the second resolution am thankful that the board are willing to assist in execution of the laws and trust the members will help personally in their various districts by accepting vaccination and re-vaccination for themselves and families and urging it upon their neighbors, as the surest safeguard against small pox. Third resolution unnecessary under the provisions above suggested. Fouth resolution, this board had already acted. First notice received May 24th. On the 25th, a member of this board met the health officer of St. Michaels, and visited the district on the 27th. On the 29th, the secretary of the State board visited every local board of health or members thereof. With popular and official co-operation we shall speedily stamp out the disease."

Under date, June 9th, Dr. Scoboria forwarded to the secretary twenty points of eight day lymph taken from a three year old child. All the health officers are gathering and using this lymph.

Under date, June 7th, Dr. Pinault reports from St. Michaels: "Epidemic still subsiding. Two new cases and two suspected cases in infected houses. All families in infected part of town vaccinated except two. The west part of town, where there has been no small pox, refuse vaccination.

"I think I shall succeed, though, in persuading them. Up to date our census of all cases is:

Cases of small pox (variola or varioloid),	46
Recovered or convalescent	29
Total deaths, including first case	6

"I have records of two hundred and forty-five vaccinations; have used 'eighth-day lymph' according to your suggestion, and it has worked well in five days. I have vaccine for those who desire it. I think the service is pretty well done; in two weeks the last case will have recovered, and then we have to proceed to the disinfection of houses. What shall I do about feather beds, used by all these Germans? Am inclined to burn them; shall I do it? The infected family that you visited with me in the town of Hassan, where child died with small pox, is all right; I think there will be no more trouble there."

Under date June 12th, Dr. A. A. Noyes filed record of his appointment as health officer of village of Monticello.

Under date June 5th, Dr. Scoboria reports "Otsego as thoroughly canvassed; St. Michaels well managed."

Under date June 13th, Dr. Pinault reports: "no new houses infected since last report; eight new cases, all in vaccinated people; very light form of varioloid, six not sick enough to keep the bed. One additional death caused by pneumonia, caused by exposure during storm of three days ago, in case of very mild varioloid. There are now under treatment but six cases, of which two are confluent. Quarantine has been raised on three houses and three more will be relieved as soon as disinfected. July 1st will see the end of this epidemic. I have seen fifty-four cases to date, and expect to find three or four more cases of mild varioloid in vaccinated people in infected houses. Vaccination is now well received by those who refused before. The circulars of the board have been distributed and done good."

Under date June 13th, secretary sent complaint by Dr. Gibbs, health officer of Monticello township, of apparent laxity of quarantine in St. Michaels, to Dr. Pinault, who explained "that every precaution had been taken."

Under date June 16th, secretary calls the attention of Dr. Pinault to the possibility suggested by Dr. Whittimore, health officer of Elk River, that wheat from infected houses or barns may be sent into Elk River for market, and instructs the local board of health of St. Michaels to provide that every care be taken to prevent danger from this source, suggesting: "First, that no person from infected family be permitted to handle the wheat to be sent off the farm. Second, that for wheat to be sent to market from houses that have been infected, the health officer should see that all persons handling the same, and all utensils used in handling or measuring it, as bags or other things for holding said grain, be entirely free from contagion, and, further, that persons going with said wheat to market be in their persons and clothing entirely free from infection. This ascertained, give certificate of fact to the local board of health of Elk River or other market where the grain is to be sold. Grain stored in an infected house during the prevalence of the disease I would not permit to go off the farm without thorough disinfection. In granaries and special places for storing, away from infected houses, I cannot see how the infection can get to the grain, but to utensils, bags and clothing it is very easy for it to go. Notify Dr. Whittimore that this action has been taken."

Under date, June 19th, Dr. Pinault accepts the above suggestion and further reports, "No house or family infected since last report and no new cases, but three cases now under treatment. Everybody in Frankfort has been vaccinated except twelve families that refused. Eighth day virus collected in St. Michaels from very healthy children does not act kindly, and same lymph collected at Osseo, where there is no small pox, did not produce half as much inflammation as St. Michaels lymph."

June 22d, secretary visited St. Michaels for the second time.

Under date July 4th, Dr. Pinault reports the interruption of mail between Dupont and Osseo, because of the fear that the local board of the town of Corcoran is not thoroughly disinfecting the family of the postmaster, in which there is small pox. Secretary had written to town board of Corcoran on June 25th, to appoint a physician as health officer, and put him in charge of the matter, there having been reported by Dr. Pinault, four cases to date of variola in one family.

Under date June 15th, Dr. Cady, health officer of Buffalo, reports "one hundred and forty-eight vaccinated, and many utterly refusing; principally Germans and Irish."

Under date of July 4th, the St. Michaels board ask: "Shall we pay expenses of parties incurred before organization of board, and for medical attendance of small pox?"

Secretary answered July 6th:

"As to first question, no. As to second question, same rule holds with case of sick with small pox as with any other disease; person able to pay, should pay for medical attendance and for nurses; the board only responsible for expenses for quarantine for benefit of whole people; as for vaccination, board should assume it for those unable to pay."

Under date July 11th, secretary received final report of local board of health of Frankfort township:

"All families released and quarantine raised yesterday; disinfection has been carried out according to instructions. Board organized on May 27th. During forty-five days the disease was raging, there were fifty-five cases of variola in persons inhabiting seventeen houses; six deaths, three adults and three children under five years of age."

"Board has held sixteen meetings; have had seven nurses employed to take care of sick, and a hired man to carry necessaries, etc., to quarantined families. The board furnished the chemicals for disinfection free of charge. Health officer was employed thirty-seven days; constable to guard the quarantined was employed thirty-one days. Had need of more nurses but could not get them at the beginning of the outbreak.

EXPENSES.

Health officer, thirty-seven days	$370 00
For team and other expenses of health officer	136 66
Expenses of members of board of health	88 39
Constable	77 50
Man and team to carry necessaries to quarantined families	137 35
Nurses employed during epidemic	274 00
Telegraph to Dr. Hewitt	1 05
Total	$1,084 95

The board believe that one-tenth of this amount should be paid by the town of Otsego because there were four cases of variola in one family, and five vaccinated in that town under their direction.

The board return thanks to the secretary of State board and to the health officer for their aid in the matter."

From Otsego, under date July 19th, Chas. N. Snow, clerk of board, reports:

"Small pox outbreak concluded. Appeared in two families, one having seven and the other eight members. There were eight cases."

St. Michaels, July 11th, Dr. Pinault reports:

"Epidemic small pox passed and quarantine raised everywhere. Your instructions have been followed to the letter. Your advice was very valuable in every respect, and I thank you as much in my name as in name of local board of health."

Besides the data given in report of the local board above, the following additional facts are reported by Dr. Pinault: "Of the persons affected with variola, thirty-eight had not been vaccinated previously; of these five died, three adults and two children; twenty-six had confluent, twenty-five the semi-confluent, and seven the discrete. There were cases semi-confluent in the first stage that were confluent in the last. Nineteen persons over eight years old and adults had confluent form with two deaths; one infant with discrete died in convulsions. Number of persons having small pox, who had been vaccinated, seventeen; one died;

eight vaccinated recently, and all had lightest form of varioloid; nine vaccinated many years ago, had more violent form of varioloid, with three semi-confluent and one death.

The seventeen houses infected had one hundred and thirty inmates; all were exposed. Fifty-nine had the disease during this outbreak; seven had had it before; fifty-nine, vaccinated, escaped with immunity. Those vaccinated recently with eighth day lymph did not take the disease. Of those vaccinated with bovine virus, eight took the disease in light form. In the above figures I do not include the first case of variola, which occurred before I took charge."

DETAIL OF OPERATION OF VACCINE IN INFECTED FAMILIES IN ST. MICHAELS, BY DR. N. J. PINAULT, HEALTH OFFICER.

First family:

T. F. A., storekeeper, in which first case occurred.

Father and mother had been vaccinated when young; both had eruptive fever and few aborted papules.

Children, seven, not vaccinated, had variola: two confluent, three semi-confluent, two discrete; all recovered. Two children escaped: one successfully vaccinated one year ago and the other May 25th, day after arrival home from St. Paul.

Second family:

A. N.

Father had variola many years ago. Wife, vaccinated fifteen years ago, had varioloid. Two children, respectively eight months and two years old, not vaccinated, had confluent variola and died. Hired man, vaccinated several times years ago, escaped.

Third family:

J. V.

Husband, aged forty-eight years, had varioloid and recovered. Wife, vaccinated when young, had semi-confluent variola and died of hemorrhage. Son, aged twenty, not vaccinated, had confluent variola and died. Five other children, not vaccinated, six to twenty-four years old, had confluent variola and recovered. One, aged ten, not vaccinated, had discrete and recovered. One boy, aged four, not vaccinated, died of confluent variola.

Fourth family:

V. V.

Husband and wife had variola when young. Mrs. S., vaccinated, had fever only. Daughter, not vaccinated, had semi-confluent variola and recovered. Two children, vaccinated June 1st with bovine virus, had very light varioloid. Seven of the children, vaccinated June 1st with humanized eighth day lymph, vaccination proved successful June 5th, and, though exposed like the others, they escaped the disease.

Fifth family:

J. V.

Husband and wife, vaccinated many years ago, had varioloid and recovered. Son, aged twenty-two years, vaccinated May 26th with bovine virus, vaccine worked June 2d at same time with confluent variola. Five other children, aged twelve, fourteen, sixteen, twenty and twenty-four years, vaccinated May 24th with bovine virus, vaccine took effect May 31st and all escaped disease.

Sixth family:

F. V.

Husband, age thirty, unvaccinated, had confluent varioloid and recovered. I was called May 25th and found him in the eruptive fever. Vaccinated his wife, age twenty-four years, and four children, one, three, four and five years, with fresh bovine virus. It worked May 31st and all escaped the disease though exposed during whole sickness of the father.

Seventh family:

P. V.

Father, age twenty-five, vaccinated when young; re-vaccinated May 25th; escaped. Mother had variola years ago and escaped. Son, Nick, was, May 25th, in pustular stage of confluent variola. Had not been vaccinated and recovered. Antony, age sixteen, not vaccinated. I vaccinated with bovine lymph, May 25th. June 1st, had confluent variola and died. Vaccine had not time to work.

Eighth family:

J. S.

Father, age thirty, re-vaccinated. Escaped. Wife, age twenty-four, not vaccinated. Seen first, May 26th, in pustular stage of confluent variola. As also, Josephine, age nine, and Lena, age 11. All recovered. Same day, May 26th, I vaccinated with eighth day humanized lymph, four other children, aged three, four, fourteen and sixteen years. May 30th, vaccination worked, except on girl, age four. I immediately re-vaccinated her with bovine virus. Neither virus affected her and on June 6th she had confluent variola of which she recovered.

Ninth family:

V. G.

Husband, age 64, re-vaccinated May 30th. Wife refused vaccination, on June 5th had light varioloid. Lena, age fifteen, never vaccinated. Was, May 30th, in confluent form of variola. Recovered. I vaccinated, May 30th, with eighth day lymph, six other children, six, eight, twelve, twenty, twenty-two and twenty-three years old, respectively. Vaccine worked June 3d. All escaped.

Tenth family:

W. Z.

Husband, aged forty, refused vaccination, had semi-confluent variola, June 9th, and recovered.

M. Z., aged thirty-three, May 28th in the confluent stage of variola; recovered.

I vaccinated with bovine virus the wife, aged forty-three, and six children, aged four, six, eight, ten, twelve and fourteen years respectively, May 28th, and vaccine worked June 5th; all escaped except one, aged fourteen, who had light aborted varioloid, June 13th. Mrs. M. Z., aged seventy-four, had varioloid when young.

Eleventh family:

J. K.

Husband, aged twenty-eight, and wife, and two children, one and two and one-half years respectively, vaccinated with bovine virus, May 25th; vaccine worked in few days; wife had aborted form varioloid in beginning of June.

Twelfth family:

P. D.

Husband, aged forty, refused re-vaccination, May 28th; had varioloid, June 12th. Wife, aged thirty-two, being near confinement was isolated; was delivered June 10th or 13th: was vaccinated, June 14th or 15th, with eighth day lymph (humanized) successfully; escaped. One son, aged thirteen years, was in semi-confluent variola, May 28th. I vaccinated, May 28th, six other children, one and a half, three, five, seven, nine and eleven years of age respectively; vaccine worked June 3d; all escaped.

Thirteenth family:

C. F.

Husband, aged thirty-four, - refused revaccination; sick June

9th, with varioloid. Wife, aged twenty-eight, never vaccinated; sick, May 28th, with variola.

I vaccinated their two children, four and seven years respectively; vaccine worked June 3d; both escaped.

Fourteenth family:

F. H.

Husband, aged twenty-eight years, never vaccinated, had discrete variola, May 28th.

I vaccinated same day (May 28th), with bovine virus; wife, aged twenty-eight years, baby, and sister; vaccine took effect June 3d. Wife and baby had light varioloid, June 13th.

Husband's father and mother, aged sixty years, vaccinated when young and after exposure to contagion.

Fifteenth family:

Mrs. H., age fifty-five years, vaccinated unsuccessfully when young, had discrete variola May 25th. Three sons, vaccinated May 25th successfully; two had light aborted varioloid June 10th. Miss K. had variola many years ago.

Sixteenth family:

A. H.

Husband, age fifty-six, had variola when young; wife, age forty-six, vaccinated and re-vaccinated.

One other married couple, age twenty-eight and twenty-two respectively, and five children, two, four, seven, ten and nineteen years respectively, vaccinated May 30th; vaccine worked June 5th; all escaped.

Two other boys, sixteen and twenty-two years, not vaccinated, were sick with variola; recovered.

Seventeenth family:

J. L., age fifty-two, vaccinated successfully June 5th; wife of J. L., vaccinated June 5th, had discrete variola June 9th; one son, not vaccinated, had variola May 28th, recovered. J. L., Jr., age twenty-three, vaccinated June 3d; wife of J. L. Jr., vaccinated June 3d; vaccine worked in both in six days; wife of J. L. Jr., had light varioloid June 17th.

All persons named above, were exposed to infection, and would have all had the small pox if they had not been protected by vaccination, except those that had had variola before. Persons mentioned under each number were members of the same house, and quarantined.

Mrs. N., house (not mentioned above) was quarantined, people having been exposed, but, protected by vaccination or having had variola, escaped.

CORCORAN TOWNSHIP—HENNEPIN COUNTY.

June 16, 1883, local board of health report quarantine of one case of small pox at Dupont post office, in compliance with request of secretary of State Board, made after report by Dr. Pinault.

"June 14th, another child having small pox, Mr. Dupont's family was quarantined to June 28th. A person has been employed to attend to their wants."

June 25th further report was made:

"Case out of danger; house still quarantined. Vaccination general."

Under date June 30th local board reports:

"Altogether there were six cases at Dupont post office; four very light, two more severe; all well now. House cleaned and clothing and bedding washed. Quarantine raised June 30th."

HENNEPIN COUNTY, GREENWOOD TOWNSHIP.

Under date June 5th case of small pox reported by chairman of local board to governor, who instructed Dr. Leonard, member of State Board, Minneapolis, to visit the same.

June 7th, Dr. Leonard reports to secretary:

"Went up last night. One case varioloid. Board will be called together to-day and appoint a health officer. Dr, Fassett vaccinating in the community."

Under date June 7th local board report that it has appointed Dr. Fassett health officer, who will look after the case, a woman, with very light varioloid."

Under date June 14th local board reports:

"Family all well."

Under date June 14th, Dr. Fassett reports that he has not been made health officer. "Quarantined the family for seven days, notifying the board to look after them. Saw chairman of board on June 12th; found that they been lax in their duty. On first visit was going by to see one of his neighbors. They informed him that the child had been exposed at Hanover, in neighborhood of St. Michaels; child said she had been sick nine days;

the mother said two weeks. Her face showed that she had had variola in light form. Examined all the rest of the family and saw no signs of trouble.

"On the 14th, on my second visit, found all up and around. One, however, had few blotches that might develop into small pox. Family are secluded and will maintain their quarantine. Told the board to keep watch of it."

Under date June 19th, Dr. Fassett reports:

"On third visit found no further evidence of disease. Do not believe that any of family ever had well marked variola."

REPORT OF DR. SCOBORIA, HEALTH OFFICER, ON SMALL POX IN WRIGHT COUNTY, OTSEGO TOWNSHIP, MAY AND JUNE, 1883.

"*Dr. C. N. Hewitt, Secretary State Board of Health, Red Wing, Minn.*

DEAR SIR: My attention was first called to the existence of small pox in Wright County May 24, 1883. I immediately proceeded to inquire into it and went to St. Michaels that very afternoon. The epidemic had existed there since May 2d, and was generally spread through the town. Dr. Pinault, of Osseo, was in attendance on the sick. Quarantine was maintained by mutual agreement, but the authorities were idle.

Dr. Pinault was urging vaccination on everyone, but found them generally opposed to it. The people were mostly Germans, and rather superstitious. I met one of the town supervisors and pointed out to him his duty in the matter.

On the following day—May 25th—I met the town supervisors of Frankfort, urged them to use their authority, quarantine infected families, elect a health officer, and vaccinate thoroughly. They took no action, however, until Sunday, May 27th. On that day Dr. Leonard, of the State Board of Health, and myself met the local board, when Dr. Leonard convinced them of the necessity of immediate action. After our interview, the local board went into session and elected Dr. N. J. Pinault health officer for the town of Frankfort. I need not go into the history of the epidemic in Frankfort, as you doubtless have received an account from Dr. Pinault.

On the same day — Sunday, May 27th — we had an interview with the town board of Otsego, the adjoining town. Dr. Leonard urged them to appoint a health officer and vaccinate. They did not appreciate the importance of a health officer, inasmuch as they had no cases of small pox in the town. The only danger they apprehended was from German farmers passing through Otsego on their way to Elk River mills, and they hoped to obviate this by obstructing the roads and forbidding travel.

Monday, May 28th, found two families infected with small pox — Peter Dehen and John Schuhmacher. The infection in both cases was traced to the original case in St. Michaels. I was not allowed to vaccinate in Schuhmacher's family. Dr. Pinault, however, succeeded in vaccinating the surviving members and took charge of the cases until quarantine was raised. Dehen's family accepted vaccination two days after the case was reported.

I was appointed health officer of Otsego Tuesday, May 29th.

In the meantime anxious inquiries came from Dayton and Hassan. I visited those places May 29th. The town board of Dayton were on the alert and ready to obey any instructions. Reports of cases in town did not bear the test of investigation.

In Hassan, Hennepin County, I discovered one case of small pox in the family of Joseph Hoaban. The patient, Annie Hoaban, had been attending the parochial school at St. Michael and contracted the disease from her landlady, the latter having been exposed to Mary Vetsch.

Annie was taken sick May 25th and died on the day of my visit, May 29th. The rest of the family, father, mother and five children, were vaccinated by Dr. Pinault, Sunday, May 27th.

The remaining members of the family escaped. The local board had quarantined the family and posted notices in different sections of the town advising people to accept vaccination. No more cases occurred in Hassan. For further details I refer you to Dr. Pinault's reports. During all this time I was urging vaccination wherever I went. I found Americans very willing and anxious to receive it.

May 31st, I commenced vaccinating according to your instructions, visiting each and every family in Otsego and keeping a record of each one. My colleague, Dr. N. K. Whittemore, had been over part of the field and vaccinated a number. On the eighth day or thereafter, I revisited the families and inspected the work, offering vaccination again in case of failures. In this way I was able to avail myself of good eighth day lymph.

I am convinced of the superiority of human virus and found the arm to arm method by far the most certain.

Of animal virus I can speak most favorably of the Wisconsin article. In lieu of the latter, samples were sent me from a Missouri farm very lightly charged and not at all reliable.

Of 284 vaccinations there were 78 failures. Of the 78 failures 41 were vaccinated for the first time in their lives.

Sixty-one were vaccinated for the second time and of these 61, 20, or thirty three per cent, were successful. Of these 20, 15 had not been vaccinated successfully within 20 years. The exception extended to 65 years in one case.

There have been eight cases of small pox in Otsego; all recovered.

Four occurred in the family of Peter Dehen; four in that of John Schuhmacher.

Peter Dehen's family consisted of seven persons; three adults and four children. The oldest, a boy, was taken sick Saturday, May 26th, and had the semiconfluent variety. He had never been vaccinated. The patient was exposed at St. Michaels, Sunday, May 13th. He had been attending the parochial school there, and boarding in a private family. On the Sunday mentioned, he called at the house of his landlady in company with his parents, and spent two hours in her presence. It was afterward learned that this landlady had visited Mary Vetsch, the first case in St. Michaels, and assisted in laying out the deceased, thus infecting her own clothes. In this way she communicated the disease to several persons. I placed the family under quarantine immediately; vaccination was accepted May 30th. The third child, Annie, was vaccinated, but with no success. This child was taken sick June 8th, or the thirteenth day of exposure to her brother. She had the semi-confluent type. The two other children had varioloid simply, having been successfully vaccinated. The youngest was taken sick Tuesday, June 12th, the fourteenth day of vaccination, and the oldest girl two days later, viz.: June 14th, and on the sixteenth day of vaccination. Vaccination did not succeed on the adult members; they were vaccinated some years ago in Germany, and have good marks. Quarantine was raised July 14th, after thorough disinfection of clothing and premises. I had all the clothing boiled, then burned sulphur in the house for forty-eight hours.

"John Schuhmacher's family consisted of eight persons. Two children took the disease May 23d, the wife, May 24th, and one other child, June 6th. I visited this family for the first time, May 28th, and quarantined the house. Vaccination was accepted May 30th; five were vaccinated, and four escaped; all recovered. Three were sick with the confluent, one with the semi-confluent type. Quarantine was raised July 10th, after the usual precautions.

"I did not learn how the family of John Schuhmacher was exposed; they were probably exposed at Aydt's house. The foregoing facts in regard to this family, were given me by Dr. Pinault, who took charge of this family after I had quarantined them.

"In conclusion, I can refer with pleasure to the town board of Otsego, the members of which co-operated with me heartily and assisted me very materially.

"Very respectfully,
CHAS. Q. SCOBORIA, M. D.
Health Officer.

"Otsego, Minn., Aug. 8, 1883."

RICHMOND, STEARNS COUNTY.

Aug. 16, 1883, notice was sent from chairman of local board of health and from Dr. H. Schmidt, health officer: "Case of small pox in town of Munson, Stearns County, in care Dr. H. Schmidt."

No further cases and patient recovered.

RESUME.

First report:

Date	Aug. 16, 1883.
Reporters	Chairman local board of Munson Township. Dr. H. Schmidt, health officer.
First case	No details given.
Number of cases	1
Number of deaths	0

HALLOCK, KITTSON COUNTY.

First report (reply to inquiry from secretary):

Date	Nov. 22, 1883.
Reporter	L. N. Eckland, station agent, Hallock.

Number of cases reported (quarantined)........................ 1

First case (Miss M. J. M.):

Origin ....Winnipeg, Manitoba.

Date of attack.......................November 18th to 22d, prox.

Quarantined.

Total during epidemic:

Number of cases.. 1

Number of deaths.. 0

Number of families infected... 1

DETAILED ACCOUNT.

November 22, 1883, secretary telegraphed to station agent, Hallock: "Telegraph facts of small pox immediately."

And to Dr. Draher, St. Vincent, the same.

Same date, L. N. Eckland, Hallock, replies: "Only one case small pox here. Closely quarantined. Don't think it will spread."

Dr. Draher, St. Vincent, replied: "Dr. Smith, Emerson, Manitoba, and myself believe it varioloid. We believe the infection was caught by the patient while boarding last winter at a hotel in Winnipeg where was a small pox patient, and it remained in her clothing to infect her when she resumed them this winter. Patient is well. All necessary precautions have been taken. Don't fear further spread."

Secretary wrote to Mr. Eckland, of Hallock, February 23d, asking that local board take particular care of all persons exposed to original infection or to infection from patient, and that local board see to careful disinfection of persons and property.

Under date of Dec. 18, 1883, Peter Daily, clerk of town of Hamden, Kittson County, forwards an account of the case of small pox reported at Hallock, and asks advice in behalf of his board:

"About four weeks ago Mary Jane Murray, a resident of this township, was taken sick at the Kelso farm, six miles west from town of Hallock, and declared by Drs. Smith and Elson and Duhick, of St. Vincent, to have small pox. She was sent on a Friday, without notice, into this township. On following Sunday the rumor got out that we had small pox in our town. All was excitement; chairman of local board drove to my office; wished me to write out small pox notices to be posted up in five places. I replied, 'am going to church; when church is over, will do it.'

Advised him to see the doctor and get his opinion. He and the doctor drove over near there, and returning the doctor informed me that it was small pox. Chairman did, at my suggestion, close the school for one week; also quarantined the house by placing a watchman over it; gave orders to employ two nurses. Dr. Smith wanted one hundred dollars to attend the case; chairman thought it too much; instructed me to see if I could get Dr. Duhick for fifty dollars. Saw county attorney and judge of probate. They told me to go ahead and incur necessary expense, and they would see it paid. So, not knowing what to do, I employed Dr. Duhick to attend the case, fumigate the house, and let me know when danger was past. The doctor put his bill in for services, nurses and watchman too. I called special meeting of town board. Their answer was that the disease was not small pox but chicken pox, and if I had contracted any debts I had the privilege of paying them. I said that I asked no pay for myself, but only asked the board to audit these bills, and then we would determine who would pay them, county or town. Was told yesterday that a case of small pox existed in N. P. Peterson's family, chairman of town board."

February 18th, secretary answered:

"Delayed answering your letter until I could get the opinion of the Attorney General upon the same question for another town. You have only to consult the law to find out the duty of your local board of health. As I was not immediately informed of the case and only heard of it through the papers, and doctor at St. Vincent, and Mr. Hanson, of Hallock, till your letter arrived, there is very little for me to advise. You should incur no expense without the formal order of your board; if you do it without such order you can easily have trouble. The rule is $10 per diem for physician when he does nothing else than attend such cases, with board and incidental expenses. Nurses can easily be gotten for $2 to $3 per day, guards for the ordinary wages."

REDWOOD FALLS, MINN., 1883.

First case......June 8th.
First report......June 10th.
Report, "not variola"......June 13th.
Attending physician......Dr. Stoddard.
No further cases.

DETAILED ACCOUNT.

Mrs. Wm. B. Herriott notified secretary, under date June 10, 1883, of a case of suspected small pox, inclosing $1 for virus.

June 11th, secretary telegraphed Dr. Stoddard, Redwood Falls: "Variola reported in your town, telegraph facts immediately."

Under date June 11th, received 4 P. M., June 12th, Dr. Stoddard writes: "Report case diagnosed by three physicians to be variola; broke out on Friday, eighth; consultation in evening, same date. Pest house constructed Saturday, ninth, and patient removed there; now in vesicular stage of eruption. Great doubt in minds of people regarding our diagnosis; we quite decided we are right. In absence of humanized virus, we use bovine. Please send instructions, or visit, as you think best. We have the circular and laws; should be glad to have our diagnosis confirmed; thus far symptoms indicate variola."

June 12th, secretary answered by telegraph: "Letter received, action approved. When doubtful of variola diagnosis always quarantine till sure." Under date 11th, secretary acknowledged Mrs. Herriott's letter and sent humanized virus.

June 12th, secretary wrote to local board, Redwood Falls; notified board of Mrs. Herriott's complaint and gave the usual instructions.

Under date June 12th, Dr. Stoddard, health officer, telegraphs: "Case milder."

Under date, June 13th, Dr. Stoddard telegraphs: "Have decided the case is not variola."

Under date June 16th, Dr. Stoddard, health officer, writes: "Patient, adult, age between eighteen and twenty, girl. Fever and headache for about twenty-four hours; headache severe; fever high; pain in loins. Eruption morning third day. When seen was papular, presenting a shot-like feel. General on body, thickest on face and chin, on soles and palms, lips and throat, surrounded by red areola. Nausea, without vomiting. Eruption first twenty-four hours, papular, then vesicular. Did not come in successive crops, but all at once. Same rise of temperature evening for four days, reaching 100½° on one or two evenings. Pulse varying from 84 to 96. Throat quite sore from the eruption. Patient sat up some every day; most of time in bed for first four days. Vesicles quite distinct forty-eight hours after eruption, gradually becoming pustular, and on fourth or fifth day smaller ones began to dry up and larger ones later without becoming umbilicated. No secondary fever. Patient never successfully vaccinated. To-day, Saturday, June 16th, after thorough bathing and disinfecting of nurse, and change of clothing, I allowed them to leave the pest house. All clothing, bedding, etc., worn by them has been left there and fumigated, so that any possible infection may not be carried to their families. I consider the case to have been an unusually aggravated one of varicella."

Secretary replied, under date June 14th: "Your telegram that your case is not variola came to hand late last night. I congratulate you upon your escape and for the *courage*, which decided you to quarantine a doubtful case until you *were* sure. Had the physician of the doubtful case at St. Michaels, last month, done as you did — more than forty-five cases of variola and six deaths would have been saved. You and your board were right and took the only safe course, *i. e.*, to seclude the patient until sure. I assume of course that you are certain that it is not variola or varioloid."

LEAF MOUNTAINS, OTTER TAIL COUNTY, MINN.

SUMMARY.

First report (to president State Board of Health).
  Date..June, 18, 1883.
  Reporter............ Dr. Titcomb, Evansville, Douglas County.
  Number of cases.. 1
First case, an immigrant, Norwegian, arrived at New York, June 2d.
  Origin ....en route from Norway.
  Taken sick..June 10th.
  First visited by physician..............................June 16th.
Totals during epidemic:
  Number of cases.. 4
  Number of deaths.. 0
  Number of families infected (in one house)..................... 2
  Last case up ....July 28th.
  Attending physician ....Dr. Titcomb.

DETAILED ACCOUNT.

Under date June 18, 1883, Dr. Titcomb reported to president State Board, Dr. Hand: "Have a case of small pox in person of an immigrant direct from Norway; landed at Castle Garden, June 2d; is located at farm house ten miles in country, half a mile from neighbors; family are now occupying granary; the house in quarantine occupied by patient, who is cared for by his wife; family have all been vaccinated; have plenty of pure air and use disinfectants liberally. Patient has no money, have called upon poor authorities; and think there is a fair prospect of preventing a spread, although some may have been infected before I called, which was on fourth day. If the State board have any instructions for me to follow, please communicate them at once."

June 20th, Dr. Hand forwarded to secretary and informed him that he had acknowledged receipt and forwarded circulars.

Secretary replied: "Organize local boards of health, and appoint health officer and report immediately."

June 25th, Dr. Titcomb replied: "I have appointed three men a board of health, living in Leaf Mountains, and am acting as health officer myself. Wish you would forward to persons named copies of the law relating to boards of health. Patient comfortable; good prospects of recovery; fifteenth day and no new cases. What is best method to get pay from the State, the patient being a new comer and moneyless?"

Secretary replied June 26, 1883:

"Your brief report at hand; I inclose law under which all care for infectious disease must be given. Section fifteen refers to non-resident sick; local boards of health must be organized according to law; supervisors of town are a board of health under the old law; they elect the health officer; local authorities must proceed in this way, and you act under them. This arranged, report patient's condition, when and where cared for, and how, and every expense incidental to his care. Has he no relatives? Are all about him vaccinated?

June 29th, Dr. Titcomb reported: "Yours of 29th at hand. Patient landed at Castle Garden, June 2d, on the way to Dakota, where he has a sister or two; stopped here on a visit with old acquaintances; was taken sick night of June 10th-11th—evening of June 10th or morning of 11th. On afternoon of 14th, his host, Johan Jacobson, came into town and asked for advice, giving the above facts and stating that the patient did not want to see a physician, claiming his trouble was not serious, and declined the expense. From the symptoms, told him the probable nature of the disease, and told him if not better the next day, it was better for all concerned for some competent physician to see the patient at once.

Saturday, June 16th, sent for and found it to be varioloid; eruption dry and scabby before complete pustulation. Patient has a wife and four small children. The last had been vaccinated, two in the old country and two just before shipping. Immediately revaccinated the wife (vaccinated in childhood); also Jacobson, wife and hired man. Jacobson's four children vaccinated successfully eighteen months ago. Vaccination successful in Mr. Jacobson and wife of patient, but in Mrs. Jacobson and laborer it failed. Patient cared for by his wife wholly. Jacobson and his family have moved into granary, one hundred yards from house. The patient is convalescent. House one-half mile from any neighbor. Notices posted up on all roads, written in English and Scandinavian.

June 26th, Jacobson's eldest son, eighteen years, developed suspicious symptoms and was moved to the house, put in care of former patient and his wife. Though vaccinated successfully less than two years years ago, the eruption has appeared plentifully on the face.

This morning the laborer complained of chilliness and backache and more fever, and I ordered him into the house with the others. These had been exposed to first patient some days before I called. No one affected outside these families. The wife of the first patient now complaining. Vaccine produced its effects on her in a few days. Sent word to town supervisors at my first visit, Jacobson himself being one of them. They met, concluded did not know what they had to do, and took no action. They do not seem to know or care so long as it is not in their families. Unable to see them all. Have sent laws and tracts to each to-day and arranged for a meeting July 1st, when I can explain to them the laws. I tried to see the sick three times a week; it is the best I can do; they are ten miles away. I charge the same as for other disease, ten dollars a trip. Made six trips already. Medicine and disinfectants, two dollars and a half. All in the neighborhood vaccinated, with, perhaps, the exception of a child seven months old. Send instructions in case the supervisors refuse to take action in preventing spread of disease and in caring for the sick."

July 2d, Simon A. Line, chairman of board supervisors of Leaf Mountains township, wrote, giving the facts as above stated and asking for information as to what is to be done; "sick, emigrant, and wife and child, and hired man of Jacobson."

To which secretary replied, July 3d:

"Dr. Titcomb of Evansville has already reported the cases. By the law which I send, your board are a board of health and must take care of the sick; you had better appoint him your health officer and act under his directions. Vaccination is your safety; quarantine all suspected people till they are safe. Call your board together, send for the doctor, and act promptly."

Under same date (July 3d), informed Dr. Titcomb of the above letter.

Under date July 10th, Dr. Titcomb reports:

"No new cases; patients convalescing; disinfection begun; able to report further in a week."

Under date July 28th, Dr. Titcomb reports: "Last patient out of bed several days; no new cases; think the danger is nearly passed; clothing has been disinfected; house quarantined another week, and then fumigated thoroughly, and then whitewashed and repapered."

July 25th, Dr. Titcomb presents a bill for attendance on small pox patients: "Seven visits, $70; disinfectants, $5; total, $75."

July 25th, Mr. Jacobson presents a bill against township of Leaf Mountains for board of emigrant, Gulbran Gulbranson and family, six persons, from June 16th to July 16th, through varioloid, $75; for nursing same, $25.

The town of Leaf Mountains presents the aggregate of above to State of Minnesota for payment, $175, all sworn to.

The bills are signed by Albert Larson and John Jacobson (by whom part of bill is presented), and not by Simon A. Line, the chairman of the board of supervisors.

DR. TITCOMB'S REPORT OF SMALL POX IN LEAF MOUNTAIN, OTTER TAIL COUNTY.

EVANSVILLE, DOUGLAS CO., Aug. 20, 1883.

G. Gulbrandson landed at Castle Garden June 2, 1883. Went directly to Leaf Mountain, Otter Tail County, Minnesota and was there taken sick with varioloid on June 11th. I first saw him on June 16th and found the eruption plentiful and characteristic. The fever at no time after the 16th went above 102½°. What it was before I do not know, nor can I give the variations of pulse or temperature from time to time because I made no note of them except from one visit to another. The eruption did not go on to complete suppuration but dried up and scaled off about two weeks from the first appearance.

Gulbrandson's wife complained of feeling tired and of limbs aching with slight headache and loss of appetite about June 23d or 24th. Pulse, 95 to 100, temperature, 99½° to 101°. A few spots appeared on the inner side of the arms and at the bend of the elbow, also one or two on the forehead. She was not confined to the bed at any time and in eight or ten days was as well as usual. On June 25th, the laborer commenced with chilliness, slight fever and backache. I do not remember how his pulse or temperature registered but it was not far from normal. A few spots appeared on his face and cheek for a short time, and after three or four days he was able to be about again.

June 22d, Jacobson's son was taken. Temperature ran up to 103° and on the fifth day reached 104°. Pulse I do not remember but I think was near 150. Eruption commenced on the afternoon of fourth day, of the coherent form. Patient had been delirious a part of the nights of the second and third days. I saw the patient but once after the fever of suppuration set in. I think temperature was then 104½°; am not certain. He commenced to mend before my next visit was to be made and the parents reported accordingly and at last accounts was making good recovery.

All persons in the neighborhood who were likely to come in contact with either patient or family were vaccinated or re-vaccinated if it had not been done within two years.

I know of nothing done by the local board as a board of health beyond the letter you received from Simon A. Line relative to the case in hand and which he wrote only after I had had a talk with him and the other supervisors on July 1st. That is the only meeting that the local board had to my knowledge. Your reply to the same was either not received or was totally ignored by the chairman. I enquired of Jacobson several times for the reply and he always said that Simon A. Line had never called a meeting of the board or said anything about instructions from you. Hence I was never appointed health officer. Moreover, one of the supervisors told Jacobson that in his opinion it was of no use to notify the State board in the first place (*i. e.* after I had sent them copies of the law relating to such cases). That if we took care of the family we would have to do so gratuitously. Neither he nor the chairman ever did anything that I know of to prevent the spread or for the care of the sick.

Jacobson (the farmer) did all he could (being quarantined) in way of posting notices and using disinfectants and ordering away several careless and mulish neighbors who would persist in coming to enquire for the patients till threatened with fine and imprisonment.

The proportion of my bill charged to the immigrant is three-quarters. I made but one or at most two visits to Jacobson's that I should not have made had his son *not* been sick and I think that one-quarter of the bill is all he should pay.

The following is an itemized bill for services rendered G. Gulbrandson and wife:

June 16th, one visit, self	$10 00
“ 18th, “ “	10 00
“ 20th, “ “	10 00
“ 24th, “ “	10 00
“ 27th, “ “	10 00
“ 29th, “ wife,	10 00
July 1st, “ “	10 00
One coat destroyed,	5 00
One pair of pants destroyed,	2 50
One shirt destroyed,	......
	$77 50

The medicines used I supplied from my saddle bags and have made no account of. The quantity of disinfectants used I am unable to state. We used sulphate of iron, zinc and sulphur freely. I used to take one kind or the other at nearly every visit and kept no account of the same. The nearest I can estimate it would be about $5.00, but the items it is impossible to give. The clothing I omitted from the bill given the supervisors through mistake.

J. P. Titcomb.

ST. PAUL.

SUMMARY.

A. Outbreak.

First report:

Date..April 7, 1883.

Reporter..Dr. Hand.

Number of cases..3

Sent to pest house, everybody vaccinated, no further report.

B. Outbreak.
First report:
Date..June 29th, 1883.
Reporter............................ Dr. H. F. Hoyt, health officer.
Number of cases..3
First Case.
Origin, clothing from lumber camp. (?)
Quarantine and pest house used.
Number of cases..11
Deaths.. 4
Families...—

DETAILED ACCOUNT.

Under date April 7, 1883, Dr. Hand reports:

"Three cases variola discovered in Gross' hotel, this city, last night; have all been sent to the pest house, and everybody in the vicinity vaccinated; quite probable we shall have some trouble.

B. Outbreak.

June 29, 1883, Dr. Hoyt health officer, reports: "Three cases of variola discovered yesterday in the heart of the city; one of them had been under care of a famale magnetic healer for two weeks. Quarantined, disinfected house and vaccinated as long as my virus held out; could not remove to pest house, as one case was in dying condition. Any instructions will be appreciated and obeyed."

June 30th, secretary answered:

"I suggest the use of humanized virus, as quicker in operation; send you all I have; you will get more from physicians of the city; make careful inquiry as to origin of outbreak; make careful inquiry as to exposure to your cases; put physicians on their guard as respects suspicious cases."

REPORT OF SMALL POX OUTBREAK IN ST. PAUL, JUNE 28, 1883, BY DR. HENRY F. HOYT.

OFFICE OF HEALTH DEPARTMENT,
ST. PAUL, MINN.

On the twenty-eighth of June, 1883, a case of small pox was reported to this department. On inspection it was found to be in a German boarding house, and it is supposed to have originated from the clothing of a laborer who came from a lumber camp that contained several cases of the disease. Camp was situated in the northern part of the State. Two more cases were discovered in same house. The first case had been sick for two weeks and had been treated by one female magnetic healer, who made some other diagnosis, and claimed the erupton was "humor of the blood," driven out by her treatment. During this time many people had been exposed. I caused the *magnetic female* to be arrested, and she was after trial fined $50. After this case had been reported, a number of others made their appearance in due time, and were all *traced directly* to the first case. They were all managed by the health department, quarantined or sent to small pox hospital, and the epidemic, or what threatened to be an epidemic, was stopped very promptly. Every precaution was of course taken, in establishing a perfect quarantine, thorough disinfection, vaccination, avoiding exposure, etc., etc. I have added a tabular statement to this report that shows the statistics of the outbreak. It includes the first ten cases. The last (eleventh) was a child just arrived from Europe. The eruption was just making its appearance when he arrived in St. Paul. We took him in charge at once and instituted measures that prevented any spread of the disease.

Very respectfully yours,
HENRY F. HOYT,
Health Officer,
St. Paul, Minn.

TO CHAS. N. HEWITT, M. D.,
Secretary State Board of Health,
Red Wing, Minn.

TABULAR STATEMENT OF SMALL POX OUTBREAK
OCCURRING IN ST. PAUL, MINN., JUNE 28, 1883, INCLUDING ONE CASE REPORTED IN DECEMBER, 1883.

No.	Name.	Sex.	AGE.		Condition.	Disposition of Case.	Result.	Nationality.	Variety of Disease.	Remarks.
			Yrs	Mos						
1	—— Behm..........	Female.	9	......	Not Vaccinated...	Quarantined..........	Died	United States.	Confluent...	
2	—— Behm..........	Male.....	......	9	Not Vaccinated...	Quarantined..........	Died	United States.	Confluent...	
3	Anna Behm.........	Female.	20	...	Not Vaccinated...	Quarantined..........	Recovered...	German.........	Confluent...	
4	A. Odenthal.........	Male.....	1	6	Not Vaccinated...	Small Pox Hospital.	Died	United States.	Confluent...	
5	Mrs. A................	Female.	40	...	Vaccinated..........	Quarantined.........	Recovered...	German.........	Discrete......	
6	L. Breslau......... ..	Male.....	21	...	Not Vaccinated...	Small Pox Hospital.	Recovered...	German.........	Confluent...	
7	Hulda Neustadt...	Female.	19	...	Vaccinated..........	Small Pox Hospital.	Recovered...	Swede..........	Discrete......	
8	—— Connemara...	Female.	30	...	Vaccinated..........	Small Pox Hospital.	Recovered...	Irish..............	Discrete......	
9	Thomas Harris....	Male.....	21	...	Not Vaccinated...	Small Pox Hospital.	Died	Colored	Confluent...	
10	G. Ericson...........	Male.....	25	...	Vaccinated..........	Small Pox Hospital.	Recovered...	Swede...........	Discrete......	
11	No Name............	Male.....	9	...	Vaccinated..........	Small Pox Hospital.	Recovered...	Swede...........	Discrete......	Contracted during voyage from Europe.

All of which is respectfully submitted,

HENRY F. HOYT, *Health Officer.*

STATEMENT OF THE EXPENDITURES, APPROVED BY THE STATE BOARD OF HEALTH, OF THE EPIDEMIC FUND APPROPRIATED BY THE LEGISLATURE, 1883.

May 3, 1883.

Gov. L. F. Hubbard, St. Paul,

SIR: I beg leave to submit following accounts against the State, which have been reviewed by the State Board of Health at the meeting of April 10, 1883, and subsequently to date.

The great confusion which exists in the accounts from both Grand Rapids and Aitkin has materially increased our labor, and in many of the accounts the difficulty is so great as to render any attempt, on our part, to get at the exact truth or justice impossible, without a summoning of witnesses and detailed examination. I submit the conclusions which the board have reached:

1st. The account of Dr. C. Q. Scoboria, approved....	$493 50
2d. The account of Dr. J. C. Rosser, approved.........	120 00
3d. The account of Dr. E. H. Belyea, approved.......	1,189 00
Dr. S. H. Van Cleve began duty for Aitkin local board of health January 26th, and ended his service March 31st, inclusive..................	650 00
Total for medical service..................	$2,452 50

I put the physicians' accounts first because they had definite per diem pay, and we are able to judge exactly the amount of their service.

The bills for food, lodging, attendance, etc, in the aggregate, are:

FOR GRAND RAPIDS.

Store bill of W. Porter & Co..................	$468 77	
We advise reduction as approved by the health officer..................	55 27	
Leaving the amount to be paid...........		$413 50
The details of the reduction are appended to each bill.		
Hotel bill of W. Porter & Co..................	$135 43	
We advise reduction as approved by the health officer..................	20 50	
	$114 93	114 93
Total carried forward..................		$2,980 93

The following accounts presented by the local board of health of Aitkin as for work done under the direction of the State board of health have been examined by the State board of health and are endorsed by said board as payable out of the appropriation of $5000.00 for expenses of State board of health in dealing with infectious diseases.

		Amt. Claimed.	Amt. Allowed.
Voucher No. I.			
J. C. Knox & Co.			
Account Jan. 28, 1883	$59 20		
Account Feb. 10, 1883	108 64		
Account Feb. 10, 1883	14 78		
Account Feb. 10, 1883	1 15		
Account Feb. 15, 1883	15 25	$201 02	$201 02
Voucher No. II.			
W. Porter & Co.			
Account Jan. 30, 1883	8 30		
Deduct $7.50 for two horse blankets			80
Voucher No. III.			
W. Porter & Co., Feb. 8, 1883	8 49	8 49	8 49
Voucher No. IV.			
W. Porter & Co.			
Account Feb. 10, 1883	5 00		
Account Feb. 12, 1883	18 87		
Account Feb. 12, 1883	1 75		
Account Feb. 13, 1883	29 40		
Account Feb. 15, 1883	23 95		
Account Feb. 4, 1883	13 02	91 99	91 99
Voucher No. V.			
W. B. Marr.			
Account Jan. 25, 1883	30 83		
Account Feb. 12, 1883	24 65	61 48	61 48
Voucher No. VI.			
F. Foley.			
Account Feb. 5, 1883	20 00		
Deduct	5 00		15 00
Voucher No. VII.			
Birch & Clark.			
Account Feb. 13, 1883	84 21		
Account Feb. 16, 1883	2 05	86 26	86 26
Voucher No. VIII.			
C. C. Lutton.			
Account Feb. 10, 1883	34 45		
Account Feb. 13, 1883	16 04		
Account Feb. 16, 1883	12 68		
Account Feb. 24, 1883	23 19	88 36	88 36
Voucher No. IX.			
W. A. Rogers.			
Account Feb. 9, 1883	60 00		
Account Feb. 3, 1883	20 00	80 00	80 00
This for team for ten days.			
One months salary to attendants allowed though no proper voucher accompanies them		240 00	240 00
Charge for E. A. Stiles, no Voucher.		150 00	
Deduct so that wages shall be two dollars ($2.00) per diem for 30 days			60 00

Voucher No. X.			
Mrs. Wilson.			
Account Feb. 16, 1883		4 50	4 50
Voucher No. XI.			
George Sproat.			
Account Jan. 25, 1883		1 50	1 50
Charges for telegraphing, 85 cents; account and order books, $1.10. Without vouchers but allowed as within knowlege of Board.		1 95	1 95
Voucher No. XII.			
Geo. F. Williams.			
Account Feb. 11, 1883		23 00	
Deduct $20.00. We approve only the items, trip to Brainerd, $2.30, making bedstead, $1.00. Total			3 50
Voucher No. XIII.			
N. Tibbitts.			
Account Feb. 16, 1883		43 90	43 90
Voucher No. XIV.			
Aitkin Lumber Co.			
Account Feb. 16, 1883		23 68	23 68
Charge to pay Calvin Berry for pest-house $500;		500 00	
Allowed only for rent			75 00
Charge for quarantine shanties to W. A. Rogers		300 00	
Allowed as rent			50 00
Voucher No. XV.			
C. C. Lutton.			
Account March 27, 1883		39 63	39 63
Voucher No. XVI.			
C. E. Hawes.			
Account March 27, 1883		12 75	12 75
Voucher No. XVII.			
E. A. Styles.			
Account March 27, 1883		22 00	22 00
Voucher No. XVIII.			
W. B. Marr.			
Account March 27, 1883		2 10	2 10
Voucher No. XIX.			
J. C. Knox & Co.			
Account Feb. 20, 1883	6 87		
Account March 3, 1883	4 50		
Account March 8, 1883	4 50		
Account March 9, 1883	4 50		
Account March 10, 1883	1 45		
Account March 19, 1883	2 00		
Account March 26, 1883	2 90	25 22	25 22
Voucher No. XX.			
W. Porter & Co.			
Account Feb. 17, 1883	1 35		
Account Feb. 19, 1883	1 45		
Account Feb. 20, 1883	6 65		
Account Feb. 26, 1883	3 00		
Account March 26, 1883	17 75	30 70	30 70
Voucher No. XXI.			
J. Brady.			
Account March 25, 1883		104 00	104 00
Voucher No. XXII.			
Birch & Clark.			
Account March 27, 1883	71 94		
Account March 30, 1883	36 20	108 14	108 14

Voucher No. XXIII.		
Mrs. Hangren.		
Account March 18, 1883	2 50	2 50
Voucher No. XXIV.		
J. M. Markham.		
Account March 30, 1883	33 00	33 00
Voucher No. XXV.		
N. Tibbetts.		
Account March 30, 1883	31 75	
Deduct $1.00 per diem, to correspond with similar bill by same person in voucher XIII above, and allowed		26 25
Total allowed		$1543 72

I certify that the above is a correct report of the action of the State board of health of Minnesota with respect to the accounts included in said report and marked by me as vouchers I—XXV, inclusive. In package herewith forwarded in said report are included all accounts of Aitkin local board of health approved for payment by said board of health.

By order of board,

CHARLES N. HEWITT.
Secretary State Board of Health of Minnesota.

TO THE GOVERNOR.

STATE BOARD OF HEALTH OF MINNESOTA—TRACT NO. 1, 1884.

(A REVISED EDITION OF TRACT NO. 1, 1883.)

SMALL POX.

(VARIOLA.)

What is it? Where does it come from? Who are liable to it? How to avoid it? How to deal with a person or persons afflicted with it? How to prevent its occurrence?

A guide to boards of health, heads of families, clergymen and others dealing with this disgusting and dangerous disease.

Copies of this tract may be had on application to the secretary, Red Wing, Minn.

NOTE.—The attention of health officers, local boards of health, heads of families, hotel and boarding house keepers is called to the "Law relating to infectious and epidemic diseases and the preservation of the public health, approved March 3, 1883."

The State Board of Health rely upon the co-operation of all good citizens. Copies of the law may be had of the secretary State Board of Health, Red Wing, Minn.

SMALL POX.

What is it? It is a very infectious disease, characterized by a peculiar eruption on the skin, which goes through the stages of pimple, little water blister, pustule and scab.

It has been mistaken for almost every eruptive disease, especially measles and chicken-pox. It is commonly called by the ignorant "Black measles," "Dutch measles."

Therefore, in all cases of doubt, seclude the patient from the family, and insist upon the opinion of a physician. A few hours will settle the question, and it is always better to err on the safe side. Failure to do this has repeatedly resulted in an outbreak of the disease, which would not have occurred had this simple precaution been taken.

Where does small pox come from? It is due to a peculiar poison, and, in Minnesota, is generally first brought by immigrants, in persons or clothing from without the State, spreading from person to person thereafter, unless promptly cared for as directed in this tract.

Who are liable to it? Every person is born with a susceptibility to small pox, as to measles and scarlet fever, and probably other diseases. Persons of all ages seem equally liable to the disease. As a rule, one in three, unprotected by vaccination, having the disease, die, and with children it is very fatal.

A person once having had an attack, is not likely to have another, but may do so, and therefore, in the presence of small pox, had better try vaccination.

How to avoid small pox? By vaccination and re-vaccination. It is to them that we owe our freedom from the epidemic form of the disease. Single cases and outbreaks in retired or isolated settlements are the most frequent cause of the occurrence of the disease as an epidemic. These outbreaks are the evidence of inexcusable neglect. The fault lies, as a rule, with clergymen, teachers and leading citizens in such settlements, to whom the people look, and are taught to look, for example and advice. The majority of outbreaks of small pox of late years in Minnesota have been in just such communities, where a physician is rarely called for any case of eruptive disease, and where small pox has secured a firm lodgment before he has been consulted in the matter. The responsibility in such settlements rests chiefly with the clergyman, who, with the present light on the subject, should instruct his people as to this danger, and himself be on the alert to detect its first occurrence, and insist upon medical advice in all doubtful cases. Of course, when a physician is called, the responsibility rests upon him, and he should be held strictly accountable. But no clergyman should neglect to urge vaccination and re-vaccination as a duty.

It is a matter of just congratulation that most of our population read, think and use common sense in this matter of small pox; accepting vaccination and re-vaccination; insisting upon strict seclusion of the sick; prompt disinfection of all infected clothing, bedding, etc., and quick and private burial of the dead. But, as above stated, all do not do it, and very many are too neglectful of the use of vaccine, upon which our safety depends. Let no one forget for a moment the fearful plague which the use of vaccine virus alone prevents.

"Before its use small pox was the most frightful and destructive disease which ever existed. It differed from all other plagues in its universal prevalence, at all seasons, and among all nations and all classes of men. Other plagues are affected by season, place, race, etc., and prevail but a short while at a time. Small pox became thoroughly domesticated, and so a permanent and terrible cause of deformity and death. Vaccination and re-vaccination have changed all this, and where they are properly used have reduced small pox to a greatly diminished prevalence and fatality, but their regular and systematic use are our only safeguards. Small pox is the same fearful pest as ever. It is not changed at all. It is simply kept off those whom vaccination guards; hence the importance of an intelligent knowledge of what vaccination is and how to use it."

What is vaccine? It is the virus of a peculiar disease of cattle called vaccinia or cow pox.

Vaccination is a method, by little scratches or punctures, of introducing this vaccine into the human body for the purpose of protecting it against small pox. It should be performed on young children on or before the third month. Remember that small pox may appear at any time; that it is very fatal to young children, and that up to puberty the protection of a successful vaccination is almost absolute. Therefore never fail to give them this protection at or before the third month. Do not wait for "teething" or "whooping cough" or anything else. *Vaccinate every little child.*

How much does vaccination protect? When thoroughly done, probably for life. But in an unknown proportion of cases, vaccinated persons exposed to small pox have a modified form of the disease called varioloid, which, though nothing like as dangerous to the sufferer, is as infectious to others as the original disease. Because of this uncertainty and consequent danger, it —vaccination—should be performed again, immediately after puberty, and, in the presence of small pox, upon all persons who have not been successfully vaccinated since puberty.

What kind of virus to use, and how? There are two kinds, animal and humanized. The latter is that which has passed through one or several human bodies. The animal virus is now for sale by all wholesale druggists, and must be fresh (*i. e.*, recently taken from the heifer), to be good.

The value of vaccination depends quite as largely upon the care and skill of its performance as upon the virus itself. It is best, therefore, to have the family physician perform the little operation and watch the progress of the disease, as perfect "marks" are evidence of protection. Each "point" (as they are called) of the animal virus holds sufficient for from three to five separate marks on the same person. They may be near together. If they can all be induced to "take," the security is greater and their number does not increase the severity or danger of the operation. Therefore, always secure, if possible, at least three perfect marks or scars as evidence of vaccination. As to humanized virus, it is common and preferred in England. In our own country and State very many physicians, including the members of the State Board of Health, prefer and use it in their own families. Its advantage is that protection begins on the fifth day, but with animal virus as a rule not sooner than the ninth day. "Eighth day lymph" (humanized) is also more reliable and certain to take. Therefore let no one hesitate to use a sample of it if approved by their family physician. In the presence of small pox the form known as "eighth day lymph" is preferable to any other for this purpose and for the above reasons. The form of "scab" is often used, it is not so certain as the lymph but is a valuable form for the preservation of the humanized vaccine.

When is Small Pox infectious? "Probably from the moment the "fever begins. It may be given by the breath of the patient be-

"fore the eruption has appeared on the surface of the body. It "continues infectious so long as any of the dry scales resulting "from the eruption remains. A single breathing of the air "where it is, is enough to give the disease. A dead body, for "several days after death, has been known to communicate the "disease, and in all probability it would produce the disease "for some months after. A mild case may, and often does give "rise to a severe one and a severe, may cause a mild one. The "dry scab of small pox would most likely induce the disease long "after, if used as we use the vaccine scab." Clothes, which have been worn by a person having the small pox, may retain the poison for a long time, as does bedding, carpet, furniture, and even the walls and floors of rooms occupied by the sick with this disease. It has repeatedly spread, in all these ways, in Minnesota. The feather bed and pillow should not be used for the sick of small pox. If they are, they should, after use, be burned, as it is very difficult, if not impossible, to disinfect them with the means usually available. They have repeatedly communicated the disease, in our experience.

How to deal with one or more persons sick with small pox.

1st. Seclude the patient, promptly and entirely, from all associations with other people—if no hospital is available, or a separate house, then it is best done in an upper room, or in warm weather, in a good wall tent away from dwellings and traveled roads. The nurse selected because she has had the disease, or been vaccinated, should be re-vaccinated as a matter of personal safety.

2d. Immediately vaccinate or re-vaccinate all persons who have had anything to do with the patient (children or adults), and seclude the affected family till vaccination "works," or the period of incubation of small pox (fourteen days) has passed. In all cases, baths and change of clothing should be insisted on before such persons mingle with other people, as should thorough disinfection of their house and its contents.

3d. Vaccination and re-vaccination should be urged on all people of the neighborhood. It is surprising how far the contagion from a single case can be spread by other persons before they themselves come down with the disease. From one case in Wadena a few years ago the disease was carried to Litchfield, the Yellowstone and to Winnipeg, by persons not sick when they left Wadena.

4th. Call a physician to all suspected cases immediately.

5th. Report all cases to the local board of health, or health officer, and by postal card to secretary State Board of Health, at Red Wing, who will forward copies of this circular and that on disinfection, and use every means in the power of the State Board to aid local authorities, individuals or families, in the battle with this disease.

6th. In case of death, wrap the body immediately in a sheet saturated with chloride of zinc solution; put in coffin and bury privately as speedily as possible. Make solution as follows: white vitriol (zinc sulphate) four ounces; common salt, two ounces; water, one gallon.

7th. After the recovery or death of a patient, disinfect all rooms, clothing, bedding, furniture, etc., used by him, with the fumes of burning sulphur, under the direction of the physician, and in accordance with the rules for disinfection of the State Board of Health (which may be gotten of the secretary at Red Wing), washing clothing, etc., as there directed.

If local boards of health and heads of families will adopt the means here advised, especially insisting on vaccination and revaccination, with strict seclusion of all persons sick or infected, and enforcing precept by example, small pox cannot get a foothold in any part of the State, or, if it occur, spread beyond the family first affected.

When it does occur in more than one or two cases, before being promptly met, the blame will rest in those who, knowing the truth and the way, have neglected both, till a loss of human life make such carelessness little, if at all, less than criminal.

DIPHTHERIA

1883–84.

REPORTS

OF

HEALTH OFFICERS AND OF LOCAL BOARDS OF HEALTH.

DIPHTHERIA.

	Source or Origin.	Date of First Case.	Date of First Report.	Reporter.	Number Cases.	Number Deaths.	Number Families Infected.	Quarantined and Disinfected.
Minneapolis, Hennepin County.	……………… ………………	From January 1, 1883,	to August 1, 1884.	Drs. Cockburn and Quinby, in monthly reports.	…………†	193	………*	Yes.
St. Paul, Ramsey County.	No cases June 1, No deaths January 1,	1883, to June 1, 1884. 1883, to August 1, 1884	………………………………	Dr. H F. Hoyt, *Health Officer.*	420 …………†	142 63	………*	Yes.
Dollymount, Grant County.	Not given.	………………………………	May 24, 1883.	Pat Leonard and Chairman Board of Supervisors.	5	4	1	Yes.
Cold Springs, Wakefield Township, Stearns County.	………………………………	………………………………	July 6, 1883.	Dr. Schmidt.	6	1	3	Ordered, but Health Officer's orders not strictly obeyed.
Farming Township, Stearns County.	Paynesville, Wis. near Lake Superior.	………………………………	August 5, 1883.	Dr. Schmidt.	…………†	3	1	Not at first.
St. Cloud, Stearns County.	From August 1, 1883, to August 1, 1884.	………………………………	August 16, 1883. September 18, 1883. October 30, 1883.	Drs. Beebe and Gilman.	120 …… ……†	19 15	………*	Yes.

Elmore, Faribault County.	Isolated case in Iowa.	....	September 29, 1883.	Wm. S. Drake and Dr. Franklin, Blue Earth City.	19	5	........*	Quarantine — Yes.
Big Lake, Sherburne County.	....	....	September 28, 1883.	Dr. Noyes, Monticello.	5	1	1	Quarantine — Yes.
Clear Water, Wright County.	....	....	October 16, 1883.	Dr. I. L. Edmunds. Dr. J. D. Wheelock, *Health Officer.*	7	5	1	Quarantine — Yes. Raised October 30.
Orrock Township, Sherburne County.	....	....	October 29, 1883.	Dr. Noyes, Monticello.	3	2	1	Yes.
Monticello Township, Wright County.	....	September 27 to	October 20, 1883.	Dr. Noyes.	12	1	.......*	Yes.
Monticello Township, Wright County.	....	....	November 4, 1883.	Dr. Noyes. Dr. Gibbs in charge.	4	1	1	Quarantine — Yes.

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* Number of families infected of this series not fully reported.

† Number of cases of this series not fully reported.

DIPHTHERIA.—*Continued.*

	Source or Origin.	Date of First Case.	Date of First Report.	Reporter.	Number Cases.	Number Deaths.	Number Families Infected.	Quarantined and Disinfected.
Herman, Grant County.	....	....	November 12, 1883.	Dr. W. F. Holden.	2	2	1	Quarantine and isolation—Yes.
Swan River, Morrison County.	....	....	November 19, 1883.	Dr. C. Johnson, Royalston. F. E. Mansfield.	16	8	9	Yes, as soon as the local board had notice.
Monticello Township, Wright County.	....	....	December 1, 1883..	Dr. Gibbs.	1	0	1	Yes.
Otsego Township, Wright County.	....	....	December 12, 1883.	Thomas McLeod, Dr. Pinault.	5	3	1	Quarantine—Yes.
St. Peter (City), Nicollet County.	Manitoba House, St. Paul.	December 31, 1883.	January 11, 1884.	Dr. D. B. Collins, *Health Officer.*	5	1	1	Quarantine—Yes.
Roscoe, Goodhue County	Goodhue Centre.	January 1, 1884.	February 13, 1884.	Dr. Hill, Dr. Glidden, Dr. McKinstry,	5	5	1	Not by board. Isolation complete by popular fear.

Forest City, Meeker County.	....	January 10, 1884.	March, 1884.	Dr. Hildebrandt.	2	2	1	Yes.
Frankfort Township, Wright County.	....	....	January 15, 1884.	Dr. Pinault.	........†	1 Jan. 31.	........*	Yes.
Rochester, Olmsted County.	....	Died January 1, 1884.	January 7, 1884.	Dr. F. R. Mosse.	14	4	5	First funeral public before quarantine.
Throughout Olmsted County.	....	....	January 11, 1884.	Dr. F. R. Mosse.	More or Less †	§Several in Oronoco Township.	....*	....
Crookston, Polk County.	....	March 18, 1884.	....	Dr. Dampier.	3	1	........*	Yes.
Crookston, Polk County.	....	May 5, 1884.	....	Dr. Dunniston.	1	0	........*	Yes.
Frankfort Township, Wright County.	....	February 3, 1884.	February 13, 1884.	Dr. F. Bistedeau, Dr. Pinault, March 24, 1884.	2 25	1 ....§	1 ......*	Yes.
New Sweden Township, Nicollet County.	Visitors from Willmar, Kandiyohi County.	February 14, 1884.	February 21, 1884.	Dr. D. B. Collins, St. Peter.	4	0	1	Yes.
Hastad, Otter Tail County.	....	....	February 14, 1844.	Dr. R. D. Erickson and others.	More than 9.	9	........*	

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* Number of families infected of this series not fully reported. † Number of cases of this series not fully reported. § Number of deaths not fully reported.

DIPHTHERIA.—*Continued.*

	Source or Origin.	Date of First Case.	Date of First Report.	Reporter.	Number Cases.	Number Deaths.	Number Families Infected.	Remarks.
Maple Grove, Hennepin County.	....	March 1, 1884. Died the 6th.	March 14, 1884.	Dr. Pinault, Osseo, *Health Officer.*	9	3	1	Yes.
Corcoran, Hennepin County.	....	....	March 24.	Dr. Pinault, Osseo.	8	4	1	First case had public funeral.
St. Peter, Nicollet County.	En route from Rotterdam.	March 29, 1884.	April 7, 1884.	Dr. D. B. Collins, *Health Officer.*	5	0	1	Quarantine—Yes.
Rochester, Olmsted County.	Bad sanitary condition.	Early Spring, 1884.	....	Dr. F. R. Mosse.	8	4	1	Yes.
Rochester, Olmsted County.	....	June 7, 1884. Last case June 19.	July 16, 1884.	Dr. W. J. Mayo.	4	2	1	Quarantine—Yes.

DIPHTHERIA.

FROM JANUARY 1, 1883, TO AUGUST 1, 1884.

Location.	Number Cases.	Number Deaths.	Number Families Infected.
Hennepin County (exclusive of Minneapolis)	17	7	2
Grant County	7	6	2
Goodhue County	5	5	1
Meeker County	2	2	1
Faribault County	19	5	*......
Sherburne County	8	3	2
Wright County	12	1	*......
	13	6	4
Morrison County	16	8	9
Nicollet County	14	1	3
Olmsted County	26	10	7
Stearns County	6	1	3
	†......	3	1
	120	19	*......
	†......	15	*......
Total (exclusive of St. Paul and Minneapolis)	114	49	34
Including the above	274	75	*......
Including the above	†......	93	*......

Number of counties infected .... 12 | Number of distinct outbreaks 30

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* Number of families infected of this series not fully reported.
† Number of cases of this series not fully reported.
§ Number of deaths of this series not fully reported.

ST. PAUL.

JUNE 1883 TO JUNE 1884.

Number of cases	420
Number of deaths	142

JANUARY 1, 1883 TO AUGUST 1, 1884.

Number of deaths	205

TABLE SHOWING DIPHTHERIA IN ST. PAUL FOR YEAR ENDING MAY 31, 1884.

	No. cases reported.	No. deaths.
1883.		
June	35	16
July	25	11
August	33	13
September	18	5
October	40	11
November	26	11
December	89	25
1884.		
January	48	15
February	24	6
March	31	10
April	24	7
May	27	12
Total	420	142

An inspection of the premises on which two hundred and ninety-one of the above reported cases of diphtheria occurred, revealed the following in regard to water supply and drainage:

Well water and cesspools	230
Connected with water works and sewers	41
Cisterns, springs and surface drainings	20

HENRY F. HOYT, M. D.,
Health Officer.

Under date, January 1st and 9th, Dr. Hand reports: "An increased prevalence of diphtheria in St. Paul, almost exclusively in West St. Paul."

At request, secretary, Dr. C. R. Witherle undertook to make a detailed investigation of diphtheria in St. Paul. Under date February 21st, he writes: "Have tabulated ninety-eight fatal cases which have occurred in St. Paul from June, 1883, to February, 1884, inclusive."

Table shows:

SEWERS.

	Cases.	
In houses not connected with sewers	92	
In houses with sewers	6	
	—	98

WATER SUPPLY.

	Cases.
West St. Paul (mostly wells and no sewers)	32
Lake Phalen (city supply)	14
Cistern	15
Well	27
Not ascertained	10

SEX.

Female	54
Male	44

AGES.

	Cases.	
0 to 1 year	1	
1 to 2 years	4	
2 to 3 years	13	
3 to 4 years	16	
1 year to 5	—	34
4 to 5 years	11	
5 to 6 years	14	
6 to 7 years	6	
7 to 8 years	7	
8 to 9 years	6	
5 years to 10	—	44

9 to 10 years	2	
10 to 11 years	5	
11 to 12 years	4	
12 to 13 years	1	
13 to 14 years	2	
14 to 15 years	1	
15 to 16 years	1	
Over 16 years	4	
	—	98
Number of families infected		79
Number of families with two deaths		10
Number of whom had wells	2	
Number of whom had cisterns	4	
Number unknown	4	
	—	10
Number had sewer connection		0
Number of families with three deaths		3
Number of whom had wells	2	
Number unknown	1	
	—	3
Number had sewer connection		0
Number of families with four deaths		1
Water supply unknown.		
Number of families with one death		65
Number of whom had wells	23	
Number of whom had city water	11	
Number had cisterns	6	
Number had sewer connection	6	
Number had cesspool	4	
Number had no sewer connection	52	
Number unknown	3	
	—	65

MINNEAPOLIS—REPORT OF HEALTH OFFICER DR. THOMAS F. QUINBY.

The statistics of diphtheria by Dr. Quinby, will be found in the secretary's report.

HEALTH OFFICER QUINBY'S REPORT ON DIPHTHERIA, SCARLET FEVER, ETC., IN MINNEAPOLIS.

MINNEAPOLIS, MINN., Nov. 2, 1884.

C. N. Hewitt, M. D., Secretary State Board of Health.

DEAR DOCTOR: Your last communication received and contents noted. Since the beginning of the year we have been singularly free from epidemics of contagious diseases. Upon looking over the records I find that since Jan. 1, 1884, there have been reported at this office, three hundred and four cases of contagious disease, exclusive of measles, of which two hundred and six were diphtheria, and ninety-three scarlet fever. Three cases of small pox were reported, investigated, and found to be either febriculæ or measles.

Upon looking over the topography and aggregation of population of our city, it will be seen that the vast majority of the cases of diphtheria have occurred in the wards that are either thickly settled, or else which are the seat of stagnant pools, or which lie so low as to preclude thus far, successful drainage of the accumulation of surface waters. Take, for example, the third ward: Through this territory runs a slimy, stinking stream, at certain seasons of the year scarcely with a perceptible current. It is covered with a green scum, and in parts reeks with filth, being made a dumping receptacle by night by unscrupulous parties too lazy or too penurious to convey the same to the proper dumping ground, as provided by law. Unfortunately, adequate proof of the misdemeanor has not been collected to enable us to prosecute the offenders to the full extent of the law, as they should be, and as they will be, if ever detected. This creek, known as Bassett's Creek, is undoubtedly a prolific source of disease, for although by no means all of the cases of diphtheria and scarlet fever were located in its immediate neighborhood, yet its influence must have been felt, as I find myself obliged to record the fact that fifty-nine cases of diphtheria and ten cases of scarlet fever occurred in that ward since Jan. 1, 1884.

In the sixth ward the condition is somewhat different. Here we have no sluggish creek dragging its filthy length along, poisoning the atmosphere with its nauseous exhalations; but a tremendous population crowded together, offering excellent facilities for the spread of contagion when once it takes root there;

and a large number of privies of the accumulative sort, and drive well in their immediate vicinity, or convenient to the back door where slops of every description are thrown. In this ward during the past ten months, I have recorded fifty-one cases of diphtheria and fourteen of scarlet fever. In the seventh ward the population is somewhat scattered, and, aside from the accumulative privy system and drive wells, I can see nothing which could have caused the recent limited epidemic of diphtheria in that section, for I have recorded thirty-five cases of diphtheria and four cases of scarlet fever during the past ten months. I say I see nothing aside from the privies and drive wells, but upon second thought I do, and at the risk of bringing down adverse criticism and even maledictions upon my head, I shall declare that it is my belief that the large necropolis situated upon an eminence in that ward, from which the land slopes in two directions, and in which are buried hundreds of bodies dead of every disease, is in some way accountable for it. If challenged for proof, perhaps I could not furnish it. It is, however, my conviction. Our fifth ward is the home of a large number of our wealthy people, and contains likewise the mills. It is abundantly supplied with city water, and recently has been thoroughly drained, although in the short time which has elapsed since draining, it is not possible to note the sanitary effect; yet in this, which should be one of our best and cleanest wards, I am obliged to record the occurrence of twenty cases of diphtheria and thirty-five cases of scarlet fever, the latter occurring largely in the very best neighborhoods. Here, where sanitary surroundings should be at their best, there is but little to suspect as an exciting cause except sewer gas from faulty plumbing, and I am led to suppose, from personal investigation, that much of it exists in our city. In the first ward I have recorded twenty-one cases of diphtheria and eight of scarlet fever. In the remaining wards, there have been but comparatively few cases, especially in the eighth, which is large and thinly settled. Of the two hundred and six cases of diphtheria reported, ninety-six have proven fatal, and of the ninety-three cases of scarlet fever, eight burial permits have been issued. In conclusion, I will take occasion to remark that, although our city ordinances are for the most part strong enough regarding the public health, yet they lack sufficient backing up by the charter; consequently we are hampered, and should be still more if the people were familiar. We have accomplished much through terrorism. At the next meeting of the legislature, steps should be taken toward amending our charter, whereby the board of health, through their executive, may cause the immediate removal of any substance or appliance whatsoever which may become a source of disease. As it now stands, we have not. I am,

Very truly yours,
THOMAS F. QUINBY, M. D.,
Health Officer of Minneapolis.

GRANT COUNTY.

SUMMARY.

A. Outbreak in Dollymount township.

First report.

Date	May 24, 1883.
Reporter	Pat. Leonard, Herman.
Number of cases	5
Number of deaths	4

First case.

Date, origin, etc., not given.

Total for epidemic:

Number of cases	5
Number of deaths	4
Number of families infected	1

Family disinfected and quarantined.

B. Outbreak in Herman township.

First report.

Date	Nov. 12, 1883.
Reporter	Dr. W. F. Holden, Herman.
Place	boarding house.
Number of cases	2
Number of deaths	1

Isolation and quarantine.

Total during epidemic:

Number of cases	2
Number of deaths	2
Number of families infected	1

DETAILED REPORT.

Herman, Nov. 12, 1883, Dr. W. F. Holden, health officer, notified the State Board of an outbreak of diphtheria in a public boarding house. He found one case had died and been buried; one case remained sick; separated sick from the well; closed the doors of the house; as there was but one case there, permitted the proprietor to disinfect his clothing and get what things were needed for the family from day to day. Asked for advice.

November 14th, secretary replied: "All well children under fourteen years of age should be moved to another and isolated house, away from the infected one. They should not return under three or four weeks, for despite the most thorough disinfection the poison of diphtheria remains in ordinary house for a long time."

Under date November 16th, health officer Dr. Holden replied: "The last case reported on twelfth, died on same night; no more cases since. Have disinfected the house thoroughly and am repeating the disinfection daily for a few days."

COLD SPRINGS, WAKEFIELD TOWNSHIP, STEARNS COUNTY.

SUMMARY.

A. Outbreak.

First report:	
Date	July 6th, 1883
Reporter	Dr. Schmidt.
Number of cases	2
Number of families infected, M. G. and P. H. S.	2
Quarantined.	
Total during epidemic:	
Number of cases	6
Number of deaths	1
Number of families infected (quarantined)	3
Date of last report	July 18th.

FARMING TOWNSHIP, STEARNS COUNTY:

B. Outbreak.

First report:

Date...August 5th, 1883.

Reporter...Dr. Schmidt.

One death. Public funeral in church, in St. Martins Township.

First case.

Origin..............Paynesville, Wisconsin, near Lake Superior.

Total during epidemic:

Number of cases...not given.

Number of deaths.. 3

Number of families infected, J. N.................................. 1

July 6th, 1883, Dr. Schmidt reports:

DETAILED ACCOUNT.

"Two infected families, one child in each. First family, M. G., child twenty months. Second family, P. H. S., child two and a half years." Same date, town clerk sent notice: "That families had been quarantined according to law."

July 10th, secretary acknowledged receipt of above and sent laws and circulars on diphtheria to the above parties.

July 11th, Dr. Schmidt reports:

"Another infected family, W. L. One child sick, eighteen months. Quarantined, etc."

July 15th, secretary served notice upon adjoining townships of Munson, Farming, St. Martin's, Eden Lake and Zion, of the existence of diphtheria in Wakefield, and serving copies of law and circulars on diphtheria.

July 13th, town clerk reports the above case and that two first cases are well.

July 18th, Dr. Schmidt reports:

"Child of M. G., Cold Springs, dead to day, There remain five cases, four of W. L. and one of H. P. S., first case reported."

July 19th, Dr. Beebe, St. Cloud, writes:

"On 17th saw some cases of diphtheria in Wakefield with Dr. Schmidt. He is having difficulty in enforcing the law, local authorities refusing to sign notices of quarantining the cases. Where he has quarantined he cannot secure nurses."

July 19th, secretary replied to Dr. Beebe:

"Note at hand; in reply, local board of health have notified me of the quarantine of persons and houses by themselves, over the signature of their clerk, and do this regularly still. Dr. Schmidt deserves great credit for insisting upon the execution of the law, as simply the means of securing for the people the protection which is, and of a right ought to be theirs. I trust every other physician will avail himself of the new health law in dealing with diphtheria, as seclusion of the sick is our mainstay in dealing with that disease."

Under date July 21st, Dr. Beebe writes, asking how to seclude sick in house of only one room, where there are four children, two of whom have diphtheria.

July 24th, secretary replies: "*Now*, all he can do is to shut up the family from intercourse with other families. In summer and warm weather, the well might sleep in the barn or granary. In cold weather I should leave the sick in the infected house and let the well live outside, *i. e.*, in other families. I suggest, also, the use of walled tents, floored with wood and easily kept warm at all temperatures by a stove. Tents 12x9 feet 6 feet wall, set end to end, make a very comfortable hospital; well floored, they cost about $25 apiece; cots would cost $4.50 apiece; four patients could be comfortably cared for in each tent."

[I believe the chance of recovery in such hospital vastly greater than in the small, crowded and dirty houses where diphtheria so often occurs in the country.]

August 5th, Dr. Schmidt writes:

"Supervisors of town of St. Martins inform me that a child of J. N., in the town of Farming, died of diphtheria last week; that that the body was brought to the church at St. Martins, and that children attended its burial. The town authorities neither reported the case, nor took any precaution either by quarantine or by disinfection, to prevent the spread of the disease. Nine years ago a woman went to Melrose and brought diphtheria back to us, and in six months' time we buried in the townships of Munson and Farming one hundred and two children who died of diphtheria. I dread it more than small pox and scarlatina, and I do not wish another outbreak. The new law is all right, as I have seen in Cold Springs, where the disease has entirely ceased. I request you to write to the town board of Farmington in strong terms to attend to their duties. One of the supervisors is a near neighbor of J. N., and is not ignorant of the facts of the disease."

August 10th, secretary wrote town board of supervisors, township of Farmington:

"I refer you to section 18, chapter 132, Laws of 1883, which your board have violated; as also section 27. This board require of you a strict obedience of the law, and also of the requirements of the circular entitled 'Diphtheria, etc.' Appoint physician as health officer and instruct him to report."

Same notice was served upon board of St. Martins Township.

August 13th, board of St. Martins replied:

"No diphtheria in this town. Have been three deaths in family of J. N., in adjoining town of Farmington. Public funerals have been forbidden. The board will closely quarantine all cases should it appear. First case of diphtheria here occurred in person of sister of J. N.'s wife, from Paynesville, near Lake Superior, in Wisconsin. One of her children had it, and the doctor there instructed her to take her family and bring them home here in Farming before they all got it."

No more trouble; no further spread of the disease in Farmington.

ST. CLOUD, STEARNS COUNTY—HEALTH OFFICER, DR. A. O. GILMAN.

SUMMARY.

First report:	
Date	Aug. 16, 1883.
Reporter	Dr. Beebe.
Number of cases	6
Number of deaths	3
Number of families infected	5
Second report:	
Date	Sept. 18, 1883.
Reporter	Dr. Gilman.
Total cases to date	34
Third report:	
Date	Oct. 30, 1883.
Reporter	Dr. Gilman.
Number of cases August 4th to date	47
Number of deaths August 4th to date under his treatment	9
Grand total:	
Number of cases	69
Number of deaths	16

REPORT FOR YEAR, AUG. 1, 1883, TO JULY 20, 1884.

Number of cases...120
Number of deaths... 19 + 15
(Remark: Of fifteen deaths reported, the corresponding number of cases sick, not reported.)

Aug. 16, 1883, Dr. Beebe reported he himself had been confined to bed with diphtheria for a week, which he, in common with three members of a clergyman's family, took from a case reported by another physician to be "putrid sore throat." "Of the subsequent cases in the second family, one child died and one recovered; in third family, one died, others were removed from the house; in fourth family, living five miles in the country, one died, and one is still very sick; in the fifth family, in a hotel, one child is still very sick, has been for two weeks; one of the boarders sick was removed to temporary hospital furnished by the city; there were a great many other cases here called diphtheria, which recovered in a few days. It is a question whether during such epidemics many of these slight attacks of tonsilitis do not partake of a diphtheriatic nature."

August 20th, secretary replied:

"Sorry to hear that you have been compelled in your own person to bear witness to the infectiousness of diphtheria; I trust Dr. Gilman is compelling report of all cases to health officer. You are right as to diphtheriatic character of many of the mild cases; they should be watched, and in *infected families anyway, should be quarantined*; watch for illustrative cases of this important fact and then you will find them. I am sure you and Gilman will have kept notes so as to throw light on the period of incubation, the duration of preliminary symptoms and the necessity for quarantine."

September 18th, Dr. Gilman reported: "Three new cases of diphtheria in the city, making thirty-four cases in all to date."

October 30th, Dr. Gilman reports: "From August fourth to date we have had under treatment for diphtheria forty-seven cases and nine deaths. Three of the latter and five other fatal cases in two families had been taking Father Staub's Specific Philopaidia; twenty-two other cases have been reported to the health office; seven of them fatal; making grand total sixty nine cases and sixteen deaths. In every case we have followed the rules for disinfection in every detail and with the utmost thoroughness, and in the majority of instances, in from two to three weeks, there would develop other cases in those rooms; whether or not these latter cases are due to the germs from the first cases or to the same influences as produced the first cases, is a question."

November 5th, secretary answered: "The amount of sulphurous acid necessary to kill the "materies morbi" of diphtheria is very great and difficult to secure, even by two pounds of sulphur burned in an average room tightly closed. My rule is to burn at least two pounds; let stand for twenty-four hours; then ventilate and try again; it is always well to have hot water in the room at the same time. By ventilation I mean the admission of abundant outdoor air for six or eight hours with sunlight; for after all, Doctor, you know the use of sulphurous acid is only an effort to hasten the oxidation of the "materies morbi." After two thorough fumigations and thorough washing with soap, whitewashing with caustic lime is the surest thing we know; but you must attend to it personally, or it won't be done; the family always think a "sulphur stink" is enough. I would not allow children to enter an infected room till two weeks after thorough disinfection, if I could help it; diphtheria is the most tenacious of life of our disease poisons."

ELMORE, FARIBAULT COUNTY, 1883.

SUMMARY.

First report:
  Reporter.........Wm. Drake, chairman board of supervisors.
  Address.........Elmore.
  Date.........Sept. 29, 1883
  Origin.........Unknown.
  Number of cases......... 8
  Quarantined.
  Number of deaths......... 4
Second report:
  Reporter.........Dr. Franklin.
  Address.........Blue Earth City.
  Date.........Oct. 5, 1883
Total:
  Number of cases.........19
  Number of deaths......... 5

DETAILED ACCOUNT.

Cases, in report number two, started from an isolated family three or four miles from any other house. Had no medical attendance except an old woman from Elmore, fifteen miles distant, who took with her a little girl three or four years old, who was taken sick on arriving home. No precautions being taken to prevent, it spread rapidly.

Wm. S. Drake, Jr., chairman board of supervisors, under date of Sept. 29, 1883, reports: "Four deaths from diphtheria. Four persons sick, in two houses; quarantined and everything favorable to the control of the disease. Dr. Franklin, of Blue Earth City, is attending the cases."

October 3d, secretary acknowledged receipt, sent laws and circulars, and urged the strictest quarantine.

Same date, secretary wrote Dr. Franklin for report.

October 5th, Dr. Franklin replied: "Elmore is situated on the State line. This disease first appeared in an isolated house just below, three or four miles from any other house. They had no medical attendance except an old woman from Elmore, fifteen miles away. She took with her a little girl four years old, who was taken sick on arriving home. No precautions were taken to keep other children away; on the contrary, had a picnic at the house while the child was sick. On the fourth or fifth day Dr. Maguire, of this place, was called, and found a case of diphtheria. The girl died, and another child in the same family. At present the disease seems spreading no further. There have been seventeen cases under my care, and three deaths. I have eight cases in Iowa, that originated at the same house, caused by a servant girl going from a family in Elmore back to Iowa. All children where she was taken sick, were taken sick; there has been one death."

October 8th, secretary wrote Dr. Franklin, asking him to work up the details of the history of the above outbreak, giving dates; but no further information was received.

BIG LAKE, SHERBURNE COUNTY.

SUMMARY.

First report:
Date.......................................Sept. 28, 1883.
Reporter..............................Dr. A. A. Noyes, Monticello.

Number of cases 5
Number of deaths 1
Quarantined.
Sanitary condition of family very bad.

Total during epidemic:
Number of cases.. 5
Number of deaths 1
Number of families infected.. 1
Quarantined.

OWOCK TOWNSHIP, SHERBURNE COUNTY.

SUMMARY.

First report:
Date..Oct. 29, 1883.
Reporter..Dr. A. A. Noyes.
Number of cases.. 3
Number of deaths.. 2
Number of families infected.. 1
Attended by physician from Elk River.

Total during epidemic:
Number of cases.. 3
Number of deaths.. 2
Number of families infected.. 1

DETAILED ACCOUNT.

Under date Sept. 28, 1883, Dr. A. A. Noyes, health officer village Monticello, reports:

"Called to see a family in Big Lake, Sherburne County; found a boy, five years old, died, and four other children sick with diphtheria; the parents supposing it to be mumps; family are Swedes, live in a small house of one room, for cooking, for sleeping, for sick and the dead. They are very poor and should have immediate help; they proposed to keep the dead till to-morrow, but I ordered its immediate burial, which I suppose was obeyed. Shall go over again and visit them to-morrow."

September 29th, secretary acknowledged receipt of notice and inclosed to health officer, Dr. Noyes, a letter to local board supervisors of Big Lake, with request for him to serve the same upon the chairman; with copies of the laws and circulars upon diphtheria: "Presume they will appoint you health officer; please see to the enforcement of the law."

October 2d, chairman board supervisors of Big Lake, C. Varaille, reports:

"Yours of twenty-ninth at hand; instructions already complied with. Dr. Noyes, health officer, quarantined the family; father remains at home; all the children sick; are reported much better. There is a rumor that there are other cases in extreme end of the town. What should we do? Shall we send the physician?"

October 4th, secretary answered: "Certainly, look up the reported cases in the other part of town, and have the physician care for them; if able they pay for their own physician; Dr. Noyes' duty as health officer is to prevent the spread of the disease."

October 29th, Dr. Noyes writes:

"To-day received circulars on diphtheria. Will distribute them. In Sherburne county the cases are all well I believe. I saw one case in Onock Township. Sick over two weeks under treatment of physician from Elk River. Two of the same family have died. The disease is reported as epidemic at Clear Water. (See report of same.)

CLEAR WATER, WRIGHT COUNTY.

SUMMARY.

First report:

Date.......................................Oct. 16, 1883.
Reporter.......Dr. I. L. Edmunds, by request of local board.
Number of cases.......................................5
Number of deaths......................................1
Number of families infected...........................1
Quarantined.
Dr. J. D. Wheelock, health officer.
Origin.................................bad water. (?)
Number of cases.......................................7
Number of deaths......................................5
Number of families infected...........1, of seven members.
Quarantined.
Quarantine raised.......................October 30th, 1883.

DETAILED ACCOUNT.

Oct. 16, 1883, Dr. I. L. Edmunds, Clear Water, writes, "at request of local board of health, for instructions for preventing diphtheria and reports there is a family five miles from there sick with the disease. Five of them have it and one case has been fatal. House has been quarantined. I think they will recover as four are now convalescing. Wish to hear from you soon. Instructions you give will be put in force."

October 17th, secretary replied:

"If not in your town please notify the town board of supervisors of the law requiring them to notify me immediately what they are doing in the matter. Copies of the law and circulars on diphtheria sent you by this mail, giving all the information necessary.

October 22d, J. D. Wheelock, M. D., health officer of Clearwater, writes: "Quarantine strictly enforced."

Dr. Edmunds, same date, sent by express a sample of water, been in use by that family, all of whom have had diphtheria, six in severe form; four have died and two are likely to die; two more may, but I think will recover. Members beside them have been equally exposed with them to every other known cause, and there is not another case within an area of six miles; therefore I suspect this water."

Secretary answered, October 22d: "At least send two quarts, which is necessary for analysis," with directions how to send it.

October 30th, Dr. Edmunds writes: "Diphtheria is over in this vicinity. Quarantine raised. From whom shall I collect my pay?"

November 1st, health officer, Clearwater, writes: "I send water as directed. No new cases; final recovery of rest of family is assured; will give further report in the future."

December 9th, health officer, Clearwater, writes: "Five died out of seven that had the disease."

Dec. 12, 1883, secretary wrote Dr. Wheelock, health officer, Clearwater:

ANALYSIS OF WATER.

Hardness	15.50
Total solid grains per gallon	26.9
Nitrates	Marked
Nitrites	Trace.
Ammonia, grains per gallon	.038

Alb. Ammonia, grains per gallon .... .035
Chlorine .... None.

"Infer vegetable rather than animal impurity. Advise to clean out the well and hunt out the source of impurity, probably surface water."

MONTICELLO TOWNSHIP, WRIGHT COUNTY.

SUMMARY.

A. Outbreak.

First report:
Date .... Nov. 4, 1883.
Reporter .... Dr. Noyes.
Dr. Gibbs in charge.

Total during epidemic:
Number of cases 4
Number of deaths 1
Number of families infected 1
Quarantined.

B. Outbreak.

Reporter .... Dr. Noyes.
From September 27th to October 20th had—
Number of cases 12
Number of deaths 1

C. Outbreak.

First report:
Date .... Dec. 1, 1883.
Reporter .... Dr. Gibbs.

Total during epidemic:
Number of cases 1
Number of cases (isolated) 1
Number of families infected (four other children) 1

DETAILED ACCOUNT.

November 4th, Dr. Noyes replies: "We have diphtheria again in close proximity to corporate limits of our city, Dr. Gibbs in charge. I visited the cases and quarantined them; two cases sick at the time, and one dead. Since I have not heard. Please state how long quarantine should be maintained after the recovery of the patient. The case in Sherburne County I fumigated with sulphur once and sometimes twice a day, and kept a dish of carbolic acidconstantly in the room. I have used the same in all cases I have treated. Have had, since September 27th to October 20th, twelvecases and one death. Believe the cause to have been filth, garbage and polluted surroundings."

December 1st, Dr. Gibbs, health officer, township Monticello, reports a case of diphtheria; immediately established quarantine; four other children in family. The above case twelve years old. Sick isolated; progressing finely; about recovered now. There have been other cases. In one family there were four cases and one death within last month. Were near the village of Monticello, and their health officer states he has reported to you. All these cases were within school district of Monticello. As president of the board of education it has been left to me to decide as to what children shall be admitted to the schools from infected families and how long after recovery."

SWAN RIVER, MORRISON COUNTY.

SUMMARY.

First report:
  Date .... Nov. 19, 1883.
  Reporter .... Dr. C. Johnson, Royalston, Morrison County.
Number of deaths 1
  No quarantine.
Final report:
  Date .... Dec. 1, 1883.
  Reporter ... F. E. Mansfield, chair'n B'd Sup. Swan River tp.

The local board of health put up the legal notices and furnished a guard to do errands for infected families.

Total during epidemic:
  Number of cases then sick 8
  Number of deaths 8
  Number of cases, as far as reported 16
  Number of deaths, as far as reported 8
  Number of families infected 9

DETAILED ACCOUNT.

TWO RIVERS AND EDENDALE, MORRISON COUNTY.

Under date Nov. 19, 1883, Dr. C. Johnson, of Royalston, Morrison County, gives notice of diphtheria in towns of Two Rivers and Edendale, in southwest part of Morrison County:

"So near as I can learn, seven deaths last week; some adults. Disease is in several families and spreading. Population German, Danish and Polish; relying chiefly upon a medicine furnished by a Roman Catholic priest. No attention paid to disinfection or quarantine. Local authorities not likely to do anything."

SWAN RIVER.

Under date November 22d, Dr. Guernon, on application of secretary, under date 20th, gave names of chairmen of boards of health of towns in and adjacent to infected district. States that disease which prevailed heretofore in 1882 and 1883 seems to have crossed the Mississippi in western direction. No diphtheria in Little Falls or adjacent. These cases are from fifteen to twenty miles south and west.

OUTBREAK IN ST. PETER.

Under date January 18th, Dr. D. B. Collins, health officer, St. Peter, reports:

"First patient was at the Manitoba House, in St. Paul; she complained of sore throat; the people there sent her to St. Peter; knows nothing in regard to exposure to diphtheria; arrived in St. Peter, December 31st, on morning train, having fever, sore throat and headache. January 4th, Mrs. K. and three children were complaining of sore throat, chilly spells followed by hot spells, as they express it; headache and pain in back. January 7th, Dr. C. first saw them, and at that time the first patient and Mrs. K. were improving. Up to date the father and a nursing child have escaped; to-day (18th) a girl, aged three years, died of 'blood poisoning;' the others have recovered or are improving. The residence is not cleanly; in fact, the foulest place I have been in for some time. There is no increase of either diphtheria or scarlet fever. Many and frequent are the curses I have received for closing the saloon and prohibiting visiting the places under consideration. The infected family consisted of seven persons: the first patient (Miss B.), her sister (Mrs. K.), one boy, aged 9; one boy, aged 8; these all recovered; a girl, aged three, died January 18th, and a father and nursing babe escaped the disease." Asks advice as to quarantine.

Inquiry in St. Paul failed to give any direct history of exposure, but the disease was very prevalent there in December.

January 19th, to health officer of St. Peter, secretary replied:

"Don't let up quarantine until at least two weeks after the last case is well; that is the instruction of this board, and if blamed you will say so."

OUTBREAK IN NEW SWEDEN TOWNSHIP.

February 21st Dr. Collins, health officer, St. Peter, reports:

"Just returned from New Sweden, twenty miles northwest of St. Peter, within five miles of Gaylord, Sibley county. Found a family, three adults and four children, living in a room fourteen feet square and very dirty, the mother, aged twenty-eight years, and three children, ranging from fifteen months to seven years of age, sick with diphtheria."

First case, baby, fifteen months, taken sick February 14th.

Second case, mother, aged twenty-eight years, taken sick February 18th.

Third case, girl, seven years old, taken sick February 19th.

Fourth case, girl, five years old, taken sick February 20th.

February 21st, mother and baby improving; throats nearly free from membrane, pulse and temperature nearly normal. The oldest girl (third case), pulse 120, temperature 102½. Other girl (fourth case), pulse 120, temperature 102, membrane thick and abundant, what we call the oyster variety. It extends over the soft palate and into the roof of the mouth, with the probability that the nasal passages will become involved. Cause of outbreak the following: About February 1st a cousin visited them from Willmar, Kandiyohi County, where had been two deaths from diphtheria just before he left. He drove across the country."

One of the St. Peter cases died from croup, the effects of exposure.

SECOND OUTBREAK IN ST. PETER.

April 7th, Dr. Collins reports:

"Five cases of diphtheria with following history: German family, by name of Vogel, sailed from Rotterdam February 29th in steamer Shulder. March 7th boy aged eleven years had some form of throat trouble. There were several other children in the steerage sick. Had no medical attendance. No deaths occurred. Reached New York City March 20th and St. Peter March 25th. March 29th a boy aged six was taken sick. On the 31st some of the neighbors heard of it and sent for me. Found well marked case of diphtheria. Cervical and submaxillary glands enlarged, fever high, temperature 105. Quarantined the family. April 1st a boy aged eight years came down, on 2nd a boy aged twelve years, on 5th a girl aged five years. In two marked implication of nasal passages. All doingwell at present. Father and mother have escaped. April 5th saw D. James' boy, aged four years. Well marked case. There is no history of exposure."

ROSCOE, GOODHUE COUNTY.

SUMMARY.

Not reported until all over.

Dr. Hill wrote:

First two cases attended by Dr. Glidden, Pine Island. Third and fourth cases attended by Dr. McKinstry, Zumbrota. Fifth case attended by Dr. Hill.

All in one family, living in old log house. No action by local board of health.

No quarantine except by fear of infection. Used disinfectant.

Origin	Goodhue Centre.
Number of cases	5
Number of deaths	5
Number of families infected	1

DIPHTHERIA—GOODHUE COUNTY.

CASE.	First.	Second.	Third.	Fourth.	Fifth.
Attending physician's name	Dr. Glidden	Dr. Glidden	C. McKinstry	C. McKinstry	Dr. Hill.
Reporter's address	Pine Island	Pine Island	No report		Pine Island.
Meteorology	Dry and cold	Not stated	No report		
Concurrent disease	None	None	No report		
Sanitary condition	Rather poor	Same as one	No report		
Dates of observation	January 1–6	January 1–18	January 17	January 17	February 1.
Age of patient	Six years	Fifteen years	Five years	Ten years	
Sex	Male	Male	Female		
Previous disease	None	Measles	No report	Measles, scarlatina and enteric fever.	
Date of exposure	December 28, 1883	Not given	No report		
Date of first symptoms	January 1, 1884	Not given	No report	January 17, 1884.	
Disinfectant	None	None	No report		
Quarantine	None	None	No report		
Duration after disease	None	None	No report		
Death	Yes	Yes	Yes	Yes, January 25.	Yes, February 1.

REMARKS.—In case number one other members of the family were allowed to occupy the room with the patient. The card was filled from father's report. Father and mother buried the dead. No one would help. Local health authorities gave no assistance. Case number two seems to belong to the same family as number one. Same name. Blanks not fully made out. Case three has also same name as one and two. Blanks otherwise not filled. In case number four name is not given, and few blanks filled. Case number five, same family as one, two, three and four. All his children died. No formal precautions taken to prevent spread of disease.

DETAILED ACCOUNT.

February 12th, secretary wrote to the chairman of board of commissioners for information as to the occurrence of diphtheria in the family of Antony Goodman. Chairman referred the letter to Drs. Chas. Hill and C. H. Glidden, of Pine Island, who had attended some of the cases. Dr. Hill replied: "Dr. Glidden, of Pine Island, attended the first two cases. Dr. McKinstry, of Zumbrota, the third and fourth, and I saw the fifth. All died. Family lived in an old log house in a state of decay; surroundings, none of the best. Furnished them with disinfectants, etc. Children were allowed to run together from the beginning. Disease was brought into the family about Christmas, probably, by a family visiting them from Goodhue Centre, some of whose children had had the disease in a mild form. No one thus far has contracted the disease from the Goodmans. The neighbors got into a panic and protected themselves by flight."

The father of the children visited the office of the State Board of Health and gave a pitiful description of the successive deaths of his children and the neglect and terror of his neighbors. He received scarcely any assistance from the outside, either in the care of the sick or the burial of his dead.

FOREST CITY, MEEKER COUNTY.

SUMMARY.

First case:

Reporter's name	Dr. Hildebrandt.
Address	Forest City.
Meteorology	Cold, dry.
Concurrent disease	None.
Sanitary condition	Good.
Dates of observation	January 10–14.
Age of patient	Two years.
Sex	Female.
Previous disease	None.
Date of exposure	Not known.
Date of first symptom	January 10th.
Disinfectant	Carbolic acid.
Quarantined.	
Duration after disease	Four weeks.
Died.	

Second case:

Reporter's name	Dr. Hildebrandt.
Address	Forest City.
Meteorology	Cold, dry.
Concurrent disease	None.
Sanitary condition	Fair.
Dates of observation	January 30th to February 4th.
Age of patient	Four years.
Sex	Male.
Previous disease	None.
Date of exposure	January 12th.
Date of first symptom	January 30th.
Disinfectant	Carbolic acid.
Quarantine	Strict.
Duration after disease	Four weeks.

Died.

In case number two there was only one room in the house, which served, of course, as sick room. Patient before sickness was strong and fat.

Cases three and four were both in the same family. Physician was not called until the disease was far advanced. Local board had to attend to burial, etc., as it was impossible to get assistance. Expenses, etc., defrayed by board.

Number of cases	2
Number of deaths	2
Number of families infected	1

DETAILED ACCOUNT.

In March, 1884, local board of health, Forest City, Meeker County, reported a circumscribed outbreak of diphtheria; two fatal cases in one family; one aged one and one-half years, on Jan. 17, 1884, which resulted in death; house disinfected; temporary aid affordedto family; February 1st, another case four years old, in same family, which was fatal; first burial was private and second was performed by local board itself, on account of fear in community. No more cases occurred. [Report of local board appended.]

March 26, 1884, secretary wrote:

"Am in receipt of the report of the outbreak (above described); I send you by this mail, cards for the reports of the two deaths and the history of the cases; if you cannot do it, ask Dr. Bissel to fill them and return to me. The report is not dated, nor is the duration of the quarantine imposed by you given. Three weeks should be the shortest duration of quarantine after the last recovery."

FRANKFORT TOWNSHIP, WRIGHT COUNTY.

SUMMARY.

First outbreak.
First report:
Date..........Jan. 15, 1884.
Reporter..........H. Berring, Town Clerk.
Number of deaths..........1
Number of families infected..........1
Quarantine enforced.
Physician in charge, Dr. Pinault.
First case:
Origin..........Not given.
Date taken sick..........Not given.
Death, date of..........Jan. 1, 1884.
Total during epidemic:
Outbreak disappeared..........Feb. 9, 1884.
Number of cases..........Not given.
Number of deaths..........1

Second outbreak.
First report:
Date..........Feb. 9, 1884.
Reporter..........H. Berring, Town Clerk.
Origin..........Unknown.
Physician in charge..........Dr. Bistedeau, Dayton.
Number of families infected..........1
First case:
Origin..........Not known.
First visited by physician..........February 3d.
Total during epidemic:
Number of cases..........2
Number of deaths..........1
Number of families infected..........1

Third outbreak.

First report:

Reporter	Dr. Pinault.
Date	March 24, 1884.
Number of cases (attended by Dr. Pinault)	25
Number of cases (attended by other physicians)	many — Number not given.
Number of cases (as far as reported)	25
Number of deaths	Not reported.

DETAILED ACCOUNT.

Under date Jan. 15, 1884, H. Berring, town clerk of Frankfort, reports:

"Outbreak of diphtheria in township in family of J. K.; origin not given.

Number of cases	Not given.
Deaths	1 child.
Date of death	Jan. 1, '84.

Quarantine enforced.

Physician in charge, Dr. Pinault, Osseo."

In answer to the above sent one hundred circulars on diphtheria.

Under date January 21st, H. Berring reports no new cases.

Under date February 9th, town clerk reports:

"First outbreak disappeared. Ten days after another case appeared in opposite side of township in family of M. S.; origin unknown. Dr. Bistedeau, of Dayton, in charge."

February 9th, secretary wrote to Dr. Bistedeau for information.

February 13th, Dr. Bistedeau answered:

"Was called to see M. S.'s family on February 3d; found two children, a boy thirteen and a girl of twelve, dangerously sick with diphtheria. Called 6th again. The girl better, the boy dying, living only an hour after my arrival. Saw and heard nothing more of it.

March 14, 1884, Dr. Pinault reports:

"We have attended twenty-five cases in the township. There have been many more attended by other physicians. Not being the health officer I made no report, but advised the local board to do so."

OSSEO, NOV. 26, 1884.

Dr. C. N. Hewitt,

DEAR DOCTOR: On my return home, after an absence of two weeks, I find your postal card. I kept no record of the epidemic of diphtheria in the town of St. Michaels (Frankfort). I attended to four families:

No. 1. Ten cases; two dead when I began, two died under my care, and six recovered.

No. 2. Three cases; one dying at my first visit, two recovered.

No. 3. Two cases; two recovered.

No. 4. Three cases; three recovered.

That is all I can remember, where I attended; but I know diphtheria was in four or five other families, with many deaths, I cannot tell the exact number, but a dozen cases at least, with also at least six or seven deaths.

There were six cases at Osseo during the summer; all recovered. I had it myself, and was very bad,—two months with paralysis. Am better now, but not very strong yet.

We have no more diphtheria around here; but several cases of typhoid fever.

Respectfully yours,

N. J. PINAULT, M. D.

	Cases.	Died.	Recovered.
No. 1	10	4	6
No. 2	3	1	2
No. 3	2	—	2
No. 4	3	—	3
	18	5	13

ROCHESTER, OLMSTED COUNTY—DR. F. R. MOSSE, HEALTH OFFICER.

SUMMARY.

First outbreak.

First report:

Date .... Jan. 7, 1884.

Reporter .... Dr. F. R. Mosse.

Nnmber of cases .... Seven, one death.

Number of families .... One, quarantined.

Sanitary condition .... Very poor.

First case:

Diagnosed	Congestion of lungs.
Died	January 1st.
Funeral	Public.
Last case	January 11th, convalescing.
Number of cases	14
Number of deaths	4
Number of families infected	5

Second outbreak.

January 11th, Dr. Mosse says:

"More or less of diphtheria throughout the county in isolated cases. There have been several deaths in Oronoco."

Third outbreak.

First report:

Date	Nov. 11, 1884.
Reporter	Dr. Mosse.
Number of cases	Eight.
Number of deaths	Four.

First case:

Date	Early spring.
Sanitary condition	Very poor.
Number of cases	8
Number of deaths	4

Fourth outbreak.

First report:

Date	July 16, 1884.
Reporter	Dr. W. J. Mayo.
Number of cases	Four.
Number of deaths	Two.
Number of families infected	One, (quarantined).

First case, June 7, 1884. Last case taken 19th. Cured.

Number of cases	4
Number of deaths	2
Number of families infected	1

Origin not given.

DETAILED ACCOUNT.

Under date of January 3d, F. R. Mosse, health officer, Rochester, reports:

"Jan. 2, 1884, seven cases of diphtheria, four malignant, were discovered in hotel known as Pierce House. Local board quarantined the house, used disinfectants and every care to prevent spread of the disease. House is in very filthy condition. The subjects of the disease are servants and members of the proprietor's family. January 3d one death occurred. Burial ordered to be private, bed used by patient burned, room disinfected by sulphur fumes. Another case reported in private family living in adjoining house to hotel. House disinfected. Local board have notified physicians and citizens to report all cases at once, which will be in turn reported immediately to you. Give instructions to physicians visiting cases of diphtheria and their other cases. Send circulars and special orders. Hygienic condition of city good. Citizens thoroughly in accord with local board."

January 5th, Dr. Mosse again wrote:

"It appears upon investigation that a child of proprietor, one and a half years old, died at the Pierce House, January 1st, and the attending physician called the disease congestion of the lungs, although credible witnesses swear that its throat was swollen externally and contained white patches internally; disagreement among doctors as to diagnosis. A public funeral was held on morning of January 3d. It appears that at the time of funeral of the above mentioned child, there were four cases of malignant diphtheria lying sick in adjoining rooms and two mild cases walking about the house. This board first knew of the facts when I was called, midnight of January 2d. to perform tracheotomy on the case reported yesterday. No operation was done. I recognized the disease, found the other cases, reported to you, and called the board together, who adopted quarantine and other measures reported. The mother of the child sick in the adjoining house, also reported yesterday, assisted in nursing the first case fatal at the Pierce House. The cases were in progress more than a week previous to the board's action because of mistake of diagnosis by the physicians in attendance. Another case occurred in family of W. W. G., whose clerk slept at the Pierce House one week ago and afterwards went to G.'s house and lodged. Shall the board take any action respecting the failure to report cases? Pierce House in very bad sanitary condition from basement to attic. It is closed now. What shall we do apout opening it after the cases have recovered? It is proposed to disinfect and renovate it and to burn contaminated clothing."

January 7th, secretary replied:

"Your letters of 3d and 5th at hand. Send you 200 circulars on diphtheria, and copies of the law. Yours is the usual history of an outbreak of diphtheria; not recognized until infection had spread. The public funeral is one of the worst features of the matter. As to future:

1st. Secure the cordial co-operation of your best physicians of all schools; let them meet with and counsel the board; this done,

2d. Enforce the law for notification by physicians and householders.

3d. Strict quarantine of the patient from others in the house and of the family from other families.

4th. Day laborers or business men who are working outside houses and not near children, might, on taking precautions to keep working clothes outside infected rooms, be allowed to continue their occupations. The infection is carried on persons and clothing from the sick to the well. Always best to have but one nurse at a time, and follow the instructions of the diphtheria circular. As to physicians, good plan is to have a long rubber coat by each one, to put on on going into the sick room, and taking off when coming away. Hands, etc., to be washed on each occasion. My experience, and I think that of others, is that in a clean, well-ventilated room with a tidy nurse there is little danger. . . . Remember that in using sulphur fumes they must be in the largest quantities and in tight rooms, not less than two pounds of sulphur to any room."

Under date January 7th, Dr. Mosse writes:

"Does general law of March, 1883, apply to boards of health of incorporated cities? Where city has its own regulations in regard to boards of health, does the general law take the place of them?"

January 8th, secretary replied:

"I have no doubt your board has the right to act under the laws of 1883. Try hard to get the profession behind you; if necessary, get a distiuct reply from every one of them."

Under date January 9th, Dr. Mosse writes:

"There are seven cases diphtheria at the Pierce House in charge of the board; house well quarantined. Two have died and one or two more may die. There are four cases of the sick in the city exposed to the infection before the Pierce House was quarantined; one of these is the undertaker that coffined the child at the Pierce House; another is a boy of ten years in naother family; the other two I have already reported; the boy of W. W. G. family has recovered."

Under date January 11th, Dr. Mosse reports:

"No more cases are reported; those now sick are recovering. The circulars on Diphtheria and General Laws have been freely distributed. Think there will be no further spread. There is more or less of it throughout the county, in isolated cases. There have been several deaths in Oronoco, twelve miles north."

January 25th, Dr. Mosse submitted a letter of inquiry, raising certain legal points as to the operation of the new law. January 26th secretary submitted them to Hon. W. J. Hahn, attorney general, asking his advice "as to what answer to give thereto, as the letter covers the questons likely to arise as to the working of the new law. An early reply with Rochester letter will greatly oblige this board."

January 16th, Dr. W. J. Mayo, secretary Rochester board of health, reports:

"An outbreak of diphtheria in family of A. M.; four children taken, respectively, on June 7th, 9th, 11th and 19th; two dying on 16th and 21st. House and occupants well quarantined; house and cellar disinfected. No further outbreak."

August 21st, Dr. Mayo reports:

"A family moved from Minneapolis to this city August 2d. One of children had but shortly before recovered from diphtheria; a second was taken on the cars and died here the 6th before medical aid could be had. The four remaining children had a mild form of the disease and are now recovered; infection before reaching here.

CROOKSTON, POLK COUNTY.

SUMMARY.

First outbreak.	
First case	March 18, 1884.
Number of cases	3
Number of deaths	1
Quarantine.	
Reporting physician	Dr. C. E. Dampier.
Second outbreak.	
First case	May 4, 1884.
Number of cases	1
Number of deaths	0
Quarantine.	
Reporter	Dr. Dunniston.

DIPHTHERIA.—POLK COUNTY.

Case	One.	Two.	Three.	Four.
Reporter's Name	Dr. Dunniston.	Dr. Dampier.	Dr. Dampier.	Dr. Dampier
Address	Crookston.	Crookston.	Crookston.	Crookston.
Meteorology	Damp and cold.	Damp and cold.	Not noted.	Not noted.
Other Disease	None.	None.	None.	None.
Sanitary Condition	Good.	Good.	Good.	Fair.
Dates of Observation	May 5–14.	March 18.	March 21–27.	March 20–27.
Age of Patient	Six years.	Sixteen years.	Fourteen years.	Eighteen years.
Sex	Female.	Female.	Female.	Female.
Previous Disease	Croup, three years before.	None.	Scarlatina.	Not noted.
Date of Exposure	May 4.	Not known.	March 14.	March 14.
First Symptom	May 5.	March 14.	March 21.	March 19.
Disinfectant	Sulph. Iron.	Not given.	Carbolic acid.	Carbonic acid and sulphur.
Quarantine	Strict.	None.	Yes.	Strict.
Duration after Disease	Six weeks.	....	Two weeks.	Two weeks.
Death	No.	Yes.	No.	No.

REMARKS.

Case number two was not known to be diphtheria, and no physician was called till eight hours before her death. Cause of disease not known, but it is supposed she contracted it by being in a cold, damp roller skating rink.

All above cases were sporadic.

AASTAD, OTTER TAIL COUNTY.

SUMMARY.

First report:
  Date ....Feb. 11, 1884.
  Reporter..........................Rumors and *Fergus Falls Journal.*
Final report:
  Date..Feb. 25, 1884.
  Reporter ....R. D. Erickson, chairman local board.
  Number of deaths.. 9
  Quarantined every house.
Total during epidemic:
  Number of cases..Not given.
  Number of deaths.. 9
  Number of families infected..............................Not given.

DETAILED ACCOUNT.

February 11th, a report reached the office of the State board that diphtheria was prevailing in towns of Aastad and Stony Brook, Otter Tail County, by the editor of *Fergus Falls Journal.*

Secretary inclosed copies of the law and circulars upon diphtheria, and asked the widest diffusion of the information. Also wrote health officer, Fergus Falls, and chairmen of local boards of Stony Brook and Aastad.

February 14th, Dr. Cole, health officer, Fergus Falls, replied: "There are some very alarming rumors of diphtheria in Stony Brook and Aastad. Three physicians of this city have attended them. I am unable to get any information from any of them as to the exact facts. Dr. Eisen claims that there have been about one hundred cases and forty-six deaths, and that public funerals are held. Able to get no definite replies from the district except from Aastad."

February 11th, secretary notified local board of Aastad township to report as to the steps their board have taken in dealing with diphtheria.

Under date February 25th, chairman local board, R. D. Erickson, replied:

"No diphtheria here now. There have been nine deaths; few who were sick recovered. The board acted promptly, quarantined every house where diphtheria was reported; called the county doctor to aid the sick when necessary. The disease spread without the people coming in contact with the infected. The board did all they could to stop its spreading, but the people are prejudiced against such proceedings. Copies of the law and circulars were of very great assistance."

MAPLE GROVE, HENNEPIN COUNTY—DR. N. J. PINAULT, HEALTH OFFICER.

SUMMARY.

First report:	
Date	March 14, 1884.
Reporter	Dr. Pinault, Osseo.
Number of cases	8
Number of deaths	1
No quarantine.	
First cases:	
Origin	Uncertain.
Taken sick	March 1st.
Died	March 6th.
First visit of physician to family	March 13th.
Total during epidemic:	
Number of cases	9
Number of deaths	3
Number of families infected	one (quarantined).
Health officer	Dr. Pinault.

DETAILED ACCOUNT.

Under date March 14th, Dr. N. J. Pinault, of Osseo, reports: "Was called on 13th to visit a family suffering with diphtheria; they are very poor; I found one child dead, two dying, and five very sick; found people visiting that family, therefore called the town board of supervisors, who organized as board of health and took charge of the family, making me the health officer. Now everything is doing well; I think the five who are alive will recover; three have died. I cannot discover the cause; they think it was brought by a little child from Buffalo township. I am told that the disease prevails in Corcoran township where nothing is being done for it; diphtheria is over in Frankfort.

I fear diphtheria will be very prevalent this spring in the neighboring towns."

Same date, March 15th, local board of health report officially their organization, and state they have taken charge of the above cases. "Any instructions will be gladly received."

On receipt of these reports secretary was absent in Memphis, Tenn., attending meeting of Sanitary Council of the Mississippi Valley; copies of the law and circulars on diphtheria, and information in regard to quarantine were sent.

March 25th, secretary returned and wrote to Dr. Pinault, and asked him to investigate the truth of the reports of diphtheria in Corcoran and adjoining towns, and act for the secretary in calling for organization of local boards.

To local board, Maple Grove, secretary wrote, acknowledging their action in organizing, and urging them to keep watch of the disease in adjoining towns. This is necessary, because infection may come as easily from without as within.

Under date April 7, 1884, local board report that, on March 29th their health officer advised them that no more cases of diphtheria existed in the town; that the disease did not extend beyond the original family, where there were eight cases and three deaths.

April 24th, Dr. Pinault reports (for the chairman of the board, who was health officer), in addition to what has already been written:

"One of the fatal cases in M. family died from inflammation of lungs, secondary disease, caused by exposure; March 18th (five days after my first visit), one of the nurses was taken sick; no others died; a daughter of this family is said to have come home in the middle of January from a family who had diphtheria; first case afterwards was March 1st, which died on March 6th, before I was called."

CORCORAN, HENNEPIN COUNTY.

First report:

Date	March 24, 1883.
Reporter	Dr. Pinault.
Number of cases	8
Number of deaths	4
Number of families infected	1

Date of his visit to family, March 21st. Were holding public funeral.

March 29th, P. Weinand, chairman board of health, Corcoran, reported four cases of diphtheria in that town. All poor cases. All proved fatal.

April 1st, secretary wrote, asking for details of cases and steps taken to prevent spread of disease.

Under date 24th, Dr. Pinault reports:

"Called March 21st by supervisors to attend diphtheria in Corcoran. No health officer. In house of J. P. I found three had died. One had been buried before my arrival and the funeral of the other two was in progress when I arrived. There were very many people and young folks in the small house. Told them of their danger. They all went home except those absolutely necessary for the burial of the two children. There were lying in the house besides, five other children, very sick. One boy of thirteen years, very sick, died. The others recovered. Their ages were from eighteen months to eighteen years. Origin unknown. The board were too slow to act at first. I am too busy to go and fill the cards myself and forward them to the board."

Under same date the chairman of the board excused the deficiency of details in the report on ground of ignorance of what was wanted. Thus a series of important facts were lost.

MINNESOTA STATE BOARD OF HEALTH.

A REVISED EDITION OF CIRCULAR NO. 1, 1880.—AUGUST 1, 1884.

DIPHTHERIA:

SUGGESTIONS CONCERNING ITS RESTRICTION AND PREVENTION.

After reading this paper carefully, please preserve it for future use.

Copies for distribution by local boards of health and others, may be obtaimed by application to the secretary of the board.

CHAS. N. HEWITT, M. D.,
Red Wing, Minn.

PREFACE.

Since the issue of the first edition of this circular in 1880, diphtheria has (up to 1883), increased in severity; but there is evidence that for the year 1883—and to this date (April 1884)—it has rapidly declined as respects the number of outbreaks. Still, the average fatality is very large, and in isolated families (in several instances) all the children have had the disease and all died. In every such case which has come to the knowledge of this board, no—or very slight—attempt was made to seclude the sick from the well.

As we have repeatedly stated in previous circulars and reports, there is no substitute for a strict enforcement of the rules and regulations of this circular. Revised to date they are the conclusions of both science and common sense, and are to be enforced by local boards of health in accordance with section 10, chapter 132, laws 1883.

Under the same section, this board requires that diphtheria be reported immediately on its occurrence to the secretary at Red Wing. So far as possible individual cases will be reported upon the "card for report of facts in one case of diphtheria," copies of which will be furnished as above. We appeal to physicians and parents to aid in this collection of facts, and in enforcing the law respecting infectious disease, copies of which may be had by application to the undersigned at Red Wing, to whom all communications for the board should be addressed.

C. N. Hewitt,
Secretary and Executive Officer.

DIPHTHERIA.

CAUSES OF DIPHTHERIA.

This disease is infections and often fearfully so.

Whatever causes may conspire to develop the first cases in a community, the disease is found to occur most frequently and to be most fatal in filthy localities.

The common and visible forms of filth are seen in the untidiness of living and sleeping rooms; in the filthy condition of clothing and persons; in decaying garbage in cellars; in the faulty condition of cess-pools and privy-vaults, etc. There are many other and probably more dangerous forms of pollution in the invisible and often inodorous gases from illy constructed drains and sewers; in the air over the soil of back yards which has been saturated with filthy slops; in poisonous exhalations from the human body, breath or excretions, and in unventilated rooms. Danger lurks not unfrequently in drinking water, which, having the appearance and taste of pure water, has been made impure and poisonous by earth leachings. The poisons of disease may reach the body in milk and food. These are some of the conditions favorable to the development of diphtheria, as of other contagious diseases.

HOW THE DISEASE IS TRANSMITTED FROM THE SICK TO THE WELL.

Contagion.

The contagium (the specific poison) of diphtheria, has been found to have a more material character than that of many other contagious diseases. Thus, while it may be transmitted to a certain distance through the air, it is apt to attach itself to clothing, bedding, furniture, etc.; to be retained for a long time in the walls of rooms; to be conveyed by water, milk and other articles of food.

It may be carried by playthings, or pet animals, and, as we have frequently noted before, the bodies of the dead are, only too often, the means of spreading the disease (of this important fact we have abundant evidence).

HOW SOON AFTER EXPOSURE IS THE DISEASE LIKELY TO OCCUR?

It is very uncertain, but the average in Minnesota experience is, from a few hours to four or five days. in other states the time is extended to two weeks. The rule, when persons are known to have been exposed, is quarantine for at least one week, as a precaution.

HOW SOON AFTER RECOVERY MAY THE PATIENT ASSOCIATE WITH THE WELL, AND THE LATTER INCUR NO RISK?

It is impossible to give a definite rule as to the time, but, however well otherwise the patient may be, if there is any remaining evidence of disease in the throat, or unhealthy discharge from the nose; if the body has not been entirely and repeatedly cleansed, or any clothing be worn that was used during sickness, there is probable danger of contagion. Three weeks should be the rule, unless the time is, for good reasons, extended by the physician or health officer, who here, as in all details of management, should be held responsible.

Children under ten years of age are, by a proportion of ninety per cent, the victims of diphtheria. It is, therefore, a disease closely allied with ill health in and about the house. This is true of its origin, but it must never be forgotten that, once generated and active, its peculiar poison may carry the disease, in its most malignant form, into the healthiest of homes.

From this brief summary of the facts it follows: That instant and entire separation of the sick from the well, is the very first step in the control of the disease. This may be effected in various ways.

1st—Removal of all sick immediately to a comfortable special hospital, and the thorough quarantine and disinfection of the infected family and house after such removal.

2d—In houses large enough and not crowded, with available upstair rooms, a very efficient seclusion can be secured.

The great difficulty is the management of cases in small houses of but one or two rooms, with a family of children, in the country, and often poorly provided for. Or in a crowded tenement house of a city, where there is no special hospital, or there is an unconquerable disinclination to go to a hospital, or to take what are thought to be, irksome precautions.

Until local boards of health are willing to provide such hospital, and of a character to win popular confidence, many families have to fight the disease at fearful odds and with a very large mortality.

In any event, the local board of health must, through its health officer, have supervision of every case. This is the only safe way for other people than the infected family, and in his work he should have the cordial assistance of the infected family and of their physician. With the medical care of the case he has nothing to do; it is only to aid in the recovery of the sick by hygienic measures, and to protect, as far as possible, the rest of the family, their neighbors and the community.

Every head of a family owes it to his family and to his neighbors, to take every precaution defined in this circular for himself, and to ask for and obtain the aid of the local board of health through the health officer. Such persons will understand that, while the law holds them to their duty (see section 22, 23, 24, chapter 132, laws 1883), it is more imperative as to local boards of health and health officers (section 10, 18, 19, 28, same chapter), and that they have a right to the service of the health officer, and may compel local boards of health to do their duty. When heads of families will act energetically and promptly themselves, they will find the health officer and family physician with them, as a rule; and many an epidemic of this fearful disease will, by such co-operation, be prevented.

This much premised, we proceed to methods — and they are of two kinds:

1st — Preventive — before the occurrence of the disease.

2d — Measures of control, *i. e.*, to prevent its spread from one or more cases to the members of the family, to neighbors, or into the community.

PREVENTIVE MEASURES.

Under the first head comes the rule applicable to the prevention of infectious and all other disease.

1st — Secure the admission of fresh air and abundant sunlight into every room of your house.

2d — Guard with jealous care, the purity of your drinking water supply.

3d — Permit no impurity, as filth, slops, sewerage, or any poion of decaying vegetable or animal matter to collect in cellar, or under or about the building.

4th — To disinfect offensive matter there is no substitute for abundant pure air and sunlight. As you cannot wait their operation, get rid of the offensive matter by burning, removal away from habitations, or deep burial. This includes contents of privy, cesspools, manure heaps, etc.

5th — As your neighbor may, in the above ways, foul your air and water supply, you have the right to the interference of your local board of health for their safety (see section 6, 7, 8 and 9, chapter 132 laws 1883).

MEASURES OF CONTROL.

As it is of the utmost importance to separate the sick of this disease from the well, at the earliest practicable moment; and as the recognition of the disease, in its first stages is often difficult, we advise:

1st — In families or neighborhoods, where the disease is known to exist, separate, at once, every one who has a "sore throat," till it is certain the trouble is not diphtheria.

2d — In all cases of doubt the above is the safest course.

3d — Have the opinion of your family physician in all cases when possible, and then the responsibility of deciding is upon him — where it properly belongs.

4th — Obey strictly the directions he may give as to management.

5th — In the absence of a physician, parents should follow the first of these rules, until all appearance of "patches" or false membrane has gone from any part of the throat or mouth.

There is often great difficulty in deciding between croup and diphtheria; and for this reason (and because it involves no more trouble), seclude all cases of croup until its real character is known, or till recovery.

SECLUSION, OR QUARANTINE

1st — Every case of diphtheria must be promptly und effectually isolated from the public, and especially from children and young persons. Nurses in the care of the sick should be restricted in their intercourse with other persons. The sick should be separated, as far as possible from well children in the same family. The isolation, however, is too imperfect to be of much value, if parents and friends permit themselves to pass, without changes of clothing, or other efficient precaution, from the sick to the well children, having the care of both at the same time.

2d—The apartment in which the case is to be treated should be previously cleared of all needless clothing, carpets and other material likely to harbor the infection. The room should be kept dry, and should receive all the sunlight possible, and a liberal supply of fresh air, without currents directly upon the patient. If the house has more than one story, an upper room is preferable to one on the lower floor, because of the possibility of more complete isolation there, and of better air and light.

3d—The discharges from the throat, nose and mouth of the patient should be received on soft pieces of cloth, which should be burned immediately.

4th—The excrement of the patient should be at once buried, and the vessels receiving the same should be frequently disinfected by sulphate of iron (copperas) in powder or solution, or by some other reliable disinfectant.

5th—Soiled bed and body linen should be placed in boiling water, or in water containing chlorinated soda, chlorinated lime, or a solution of chloride of zinc, and never be allowed to pass into the general wash.

6th—Persons having recovered from diphtheria, should not be allowed, too soon, to associate with other persons, especially children, or to attend school, church, or any public assembly, till all danger of transmitting the disease has passed.

Do not forget this truth: That it is not proven that any deodorizer or disinfectant can destroy the specific poison in a sick room while it is occupied. And the conclusion is, not to trust to any such means, but to change of clothing, and the limiting of the intercourse between the sick and well. Limit admission of well to sick to the absolute necessities, and that under careful instructions. Remember, too, that this course is better for the patient, and for the one or two nurses who care for him.

HOW TO DISINFECT THE CLOTHING, BEDDING, FURNITURE AND OTHER THINGS AFTER THE RECOVERY.

1st—All things to be washed should be first soaked in chloride of zinc solution (described below), and then washed in hot soap and water. Articles which cannot be washed, and are worth preserving, should be hung up in the room, on lines. Straw ticks should be opened, and the straw burned, and the hair mattreses should be thoroughly opened, and the hair well loosened up. Feather beds and pillows are very difficult to disinfect, and should never be used by the sick of any infectious disease, unless with the intention of their destruction after use. All the things being so hung as to be most accessible to the sulphurous vapors, put an iron kettle containing live coals on a brick, in a tub filled to the depth of two inches or more with hot water. This last to prevent danger from fire and to make the air moist. The windows and all openings, except the door, being well stopped, put at least a pound of sulphur on the coals to each ten cubic feet of air space (several fires are better than one). Leave the room and shut the door tight for at least six hours. If the disinfection does not seem complete, repeat the burning of the sulphur as before.

AFTER FUMIGATION WITH BURNING SULPHUR.

For washing the floors, furniture, wood work (and walls, if painted), use hot soap and water; and when dry sponge off with a weak solution of corrosive sublimate (ten to twenty grains to gallon). This drug is a poison, but in this proportion may be safely used for this purpose, under the direction of the family physician or health officer, and has been proved, by experiment, to be one of the most destructive to the lower forms of vegetable life connected with infectious disease. Leave the room open to sun and wind for a week after. Blankets, pillows, handkerchiefs, carpets, etc., should be exposed to the sunlight and air for several days, and then thoroughly beaten. This is best done in an open field, and the operator to stand to the windward of the article beaten to avoid inspiring the dust.

DISINFECTANTS NATURAL AND ARTIFICIAL.

In any case, whether for prevention or destruction, of the specific poisons of diphtheria, the chief agents are the natural ones.

Abundant sunlight, fresh air and pure water. Add to these cleanliness of person, clothing, house and soil, and the danger from this, as all other, disease is reduced to a minimum.

ARTIFICIAL DISINFECTANTS.

Chlorinated soda (known to druggists as Labarraque's solution), which should be diluted for use with ten parts of water. Chloride of zinc solution, cheaper, and as efficient probably, may be made by adding, one at a time, four ounces of sulphate of zinc (white vitriol), and two ounces of common salt to one gallon of water. Sulphate of iron (green vitriol) solution is made by dissolving two pounds of the salt in one gallon of hot water, and is used to disinfect bed pans or vessels before use. So used, all discharges may be instantly made harmless. For this purpose half a teacup in the vessel is sufficient, the contents then to be buried or burned.

SPECIAL PREVENTIVE MEASURES.

1. Avoid houses where the disease has appeared, until they have been thoroughly disinfected.
2. Secure dryness of the ground under and around the dwelling by complete drainage, and allow no pollution of the soil by any form of filth.
3. Secure dryness and good ventilation of every part of the dwelling.
4. See that no cess-pool remains near the house, and that the privy vault is in a proper condition and supplied with dry earth or disinfectants.
5. Let the sun and air have free access to the house and especially to the sleeping rooms.
6. Do not let fair external appearances cover hidden sources of pollution.
7. Secure proper and well prepared food and comfortable clothing.

N. B.—We apply the term diphtheria only to the specific disease, the characteristics of which are now well understood by intelligent physicians and others, and not to the non-specific, catarrhal and inflammatory affections of the throat, which the ignorant often miscall diphtheria. In all cases of doubt, the opinion of the family physician should be immediately sought.

DISPOSAL OF THE DEAD FROM DIPHTHERIA.

As already stated, the dead body can and often does communicate the disease, not only when handled, or touched, as in kissing, but by giving off into the air the poison of the disease. Immediately after death the body should be wrapped in a sheet saturated with the zinc or soda solutions mentioned above, and put into a tight coffin. Burial should be immediate as possible and private. Public funerals are positively forbidden by law (section 28, chap. 132, Laws 1883). This section will be strictly enforced by local boards of health and by health officers. No excuse will be accepted for neglect of this necessary precaution, and penalties will be strictly enforced. If the clergy and educated people will co-operate with health officers and boards of health in the attempt to prevent and control diphtheria heartily and constantly, the result of the work will be apparent to all in the diminished frequency of outbreaks and the rapid diminution of the number and mortality of the victims.

HEALTH OFFICERS' REPORTS FOR 1883 AND 1884.

The following reports are submitted as illustrations of the working of the new health law. It will be seen how much depends upon the character and energy of the health officer. He is the centre of local sanitary work, and further legislation is required to secure competent physicians as health officers and to properly compensate them for their work.

CALEDONIA, HOUSTON COUNTY.

Health officer.................................... A. C. Gates, M. D.
Date..May 22, 1883.

Reports appointment as health officer and requests instructions, which were sent.

BENSON COUNTY.

Health officer...H. B. Carter.
Date..May 26, 1883.

Reports thorough examination of sanitary condition of the village and finds it good.

ST. PETER, NICOLLET COUNTY.

Health officer..D. B. Collins, M. D.
Date...May 31, 1883.
Contagious or epidemic diseases..............................None.
Sanitary condition..Good.

"In compliance with notice, served by local board, all yards and alleys have been cleaned; sewer system ample for present; easily extended when necessary. Water supply abundant and good. Attention is called to present method of disposing of slops upon surface of either yards or alleys, and request some other way."

Suggestions to that end sent.

GRACEVILLE, BIG STONE COUNTY, MINN.

Health officer......................................B. M. Randall, M. D.
Date...June 4, 1883.

"Most difficulty in the sanitary inspection of cellars, etc., from the opposition of people to inspection."

Secretary replied June 6, 1883, inclosing copies of the law and all circulars, stating "these powers are to be used with discretion; you will be able to accomplish great good by acting quietly, persistently and with judgment."

FARMINGTON, DAKOTA COUNTY.

Health officer..E. D. Abell, M. D.
Date...June 5, 1883

Infectious diseases: "Few isolated cases scarlatina; the annual inspection develops a number of nuisances, such as foul hog pens, cesspools, etc., which have been ordered abated and which is being done. Posted the usual notices about the village ordering the cleaning up of all alleys, yards, cesspools, streets, etc., which have been generally obeyed; most of outhouses are placed a considerable distance from houses and wells; wells mostly drive wells, driven fourteen to twenty-four feet; water reached usually by digging eight to ten feet; of course easily reached by sewage, though two feet of yellow clay preserves a great deal of it."

ST. PAUL.

Health officer..Dr. H. F. Hoyt.
Date...June 12, 1883.

Sends notice of his appointment as health officer, asking for instructions and promising co-operation with State board in sanitary work.

The secretary replied, giving the advice asked for.

Aug. 25, 1883, health officer submitted proposed revision of health code of city for suggestions from the secretary, which were sent.

AUDUBON, BECKER COUNTY, MINN.

Health officer..........................Chas. A. Lampanius, M. D.
Date..July 10, 1883.

Notice of organization of local board of health; solicits instructions and communications from State board, which were sent.

ANOKA, ANOKA COUNTY.

Health officer............................A. W. Giddings, M. D.
Date..July 18, 1883.

Submits his report to city authorities: Made a thorough inspection of all business and thickly inhabited portions of the city. Found the same in bad sanitary condition with one or two exceptions. Was received kindly, with promises from all parties to put the premises in good sanitary condition in reasonable time. At this date this has been done:

Number of places visited..77
Number of written notices served.................................11
Number of notices to remove dead animals...................... 3

Secretary replied.

HEALTH OFFICERS' REPORT FOR 1884.

HOWARD, WRIGHT COUNTY.

Health officer..................................E. Y. Chilton, M. D.
Date..Feb. 1, 1884.

Gives notice of his appointment as health officer. Reports health of population excellent; sanitary conditions fair; no contagious disease.

CROOKSTON, POLK COUNTY.

Health officer..................................C. E. Dampier, M. D.
Date ....April 4, 1884.

City recorder writes; asks what wages are usually paid health officers.

Secretary replied: "Pay regulated by the service required."

SAUK CENTRE, STEARNS COUNTY.

Health officer ....J. A. Du Bois, M. D.
Date of report...April 6, 1884.
Infectious disease.
Single case scarlatina.
Quarantined.

Removal of refuse and debris going on rapidly in streets and residences.

WINONA CITY, WINONA COUNTY.

Health officer...................................Franklin Staples, M. D.
Date ——.

"Inclosed please find the annual report of health officer."

BOARD OF HEALTH.

ANNUAL REPORT OF THE BOARD OF HEALTH OF THE CITY OF WINONA TO THE CITY COUNCIL.

To the Mayor and City Council of the City of Winona:

In accordance with the law regulating the health department of the city of Winona, the board of health submits the following report of its acts and proceedings, and of the work of the health officer during the present year:

The ordinance prescribing the duties of the board of health and of the health officer of the city was passed by the present council and took effect June 25, 1883. Since that date the board has held its regular monthly meetings on the evening of the first day of each month, except in a few instances when a quorum was not present. It has received all complaints of nuisances which were represented as affecting the sanitary condition of any part of the city, and, either through the health officer or the chief of police, has made the required inspection, and when necessary has taken action for the removal of the same.

The law of the State of Minnesota requires that the health officer of every town, village, borough or city, shall make, once in each year, in the month of May, and oftener if necessary, a thorough sanitary inspection of said town, village, borough or city. This inspection of the city was made at the beginning of the present year.

The city ordinance passed in June last made provision for the collection of the mortality statistics of the city, the collecting and recording of the same by the health officer; also that a summary of such statistics for each month should be published in the daily paper. This work has been done since the first of July, 1883, and a summary of these statistics from that date to the end of March, 1884, nine months, are as follows:

MORTUALY STATISTICS OF WINONA.

The total number of deaths in each month was as follows:

July	8
August	22
September	21
October	18
November	15
December	13
January	11
February	8
March	16
Total for nine months	132

Of these seventy-five were males and fifty-seven were females.

AGES.

The number under one year was	34
Over one year and under five	26
Over five and under fifteen	15
Over fifteen and under thirty	18
Over thirty	39
Total	132

CAUSES OF DEATH.

From phthisis	14
Pneumonia	5
Croup	6
Diphtheria	1

Meningitis	9
Diarrhœa	9
Dysentery	13
Cholera infantum	4
Typhoid fever	2
Fever	3
Puerperal inflammation	3
Septicæmia	1
Childbirth	1
Peritonitis	5
Heart disease	7
Paralysis	4
Convulsions	5
Marasmus	1
Necrosis	1
Chronic cystitis	1
Abcess	1
Purpura hemorrhagica	1
Anemia	1
Inebriety	1
Accident	4
Tumor	1
Cancer	7
Suicide	1
Old age	3
Unknown	17
Total	132

The health officer, as city physician, has attended to the surgical cases that have occurred at the police station, has visited such persons and families in the different parts of the city, as have required his services, through the order of the mayor or chief of police, and has furnished such medicine and surgical material as was required. The city hospital and pest house is in charge of Mr. F. Deertz, under direction of the board of health. The family of Mr. Deertz has lived in the house for several years. The premises are kept in good order, and suitable rooms are in readiness at all times for patients. Only one patient has been treated at the hospital during the present year, and this one only for about four or five weeks.

Owing to the fact that it is not well understood, especially among the poorer classes, that it is the duty of the county rather than of the city to provide for the poor, the city physician has many calls every year from indigent persons desiring medical aid. It is often not practicable to do otherwise than to render services and frequently to supply medicines to such applicants.

OBSERVATIONS.

It will be seen that the knowledge we now have concerning the mortuary statisties of our city may be made of much practical value. A city of sixteen thousand inhabitants, of mixed population, a manufacturing and railroad city, where accidents are necessarily frequent, and one where emigrants and other transient people are liable to be detained because of sickness and death, this, with an average monthly death rate of less than fifteen, can well afford to publish its mortality statistics. It will be seen that no epidemic, nor even any contagious or infectious diseases, have existed during the year. It may be remarked here that what has been found to be true this year concerning this class of diseases has, in the main, been true for many years. Attention is called to one or two features in the table of statistics. Of the one hundred and thirty-two we have fourteen deaths from phthisis pulmonalis. The explanation is this: The cities of Minnesota have many invalids, who have in former days com to this State because of existing or threatened consumption. Our city must not be charged as having furnished the causes for the deaths in most of these cases. Seven deaths were from cancer, four from paralysis and three from old age. The large number of deaths being designated as from unknown causes, results from the fact that the undertakers, through whom our statistics come, often find it difficult to get the truth concerning the cause of death. The reason, we think, for our comparative freedom from zymotic and infectious diseases is largely due to the location of our city, its freedom from all forms of malaria, the character of our soil and of the underlying earth and gravel. The great bed of coarse, porous gravel extends not only under the entire city and its surroundings, but under the channel and sloughs of the river and under the lake back of the city. In this connection it may be said that the character of our water supply undoubtedly has much to do in promoting the health of our population. The water of the city is from two sources, viz.: The city well which supplies the water works, and wells which are mostly known as drive wells, which are sunk in the sand and gravel. During the year frequent inspection of the city well has been made, and, with the improvements ordered by the council and carried into effect by the board of health, we are able to report that the well is in a good sanitary condition and contains pure water. The water from the drive wells of the city is pure in many places, while in some places it is not pure. The purity of the water from these wells depends mainly upon the depth of the well and the character of the soil immediately surrounding the well. The outside of the pipe has been found to be a means of conducting impurities from the surface to the water supply. Specimens of water from several of these wells have been obtained from the health officer and sent to the laboratory of the State Board of Health for analysis, and reports to parties immediately interested have been made, and in a few instances these examinations have resulted in condemning the water as unfit for use.

Finally, the board of health desires to represent to the city council and would urgently call its attention to the evident fact that the future good sanitary condition of the city demands the immediate establishment of a good system of drainage and of a systematic and efficient means for the disposal of all refuse matter, and for suitable regulations concerning privy vaults, cesspools, etc. This would include a system of police sanitary inspection and of systematic scavenger work, under the management of the city. Plans should at once be prepared by intelligent and competent experts and submitted to the city council for its adoption. What has been able to meet the necessities of our city in her younger days will not suffice for the population of our near future, with the increasing sources and amount of soil pollution.

FRANKLIN STAPLES, M. D.,
Health Officer.
JOHN H. NAGLER,
JOSEPH MILANOWSKI,
H. P. BOYNTON,
JOHN MURPHY,
Board of Health.

April 7, 1884.

LEROY, FILLMORE COUNTY.

Health officer..............................J. A. Kingsbury, M. D.
Date ....April 8, 1884.
Local board organized March 24th.

MINNEAPOLIS.

Health officer..............................Thos. F. Quinby, M. D.
Date..April 9, 1884.

Gives notice of his election as health officer for ensuing year, and expresses his earnest desire to co-operate with State board in furthering sanitary measures.

To which secretary immediately replied, making such suggestions as were needed.

CROOKSTON, POLK COUNTY.

Health officer..................................C. E. Dampier, M. D.
Date ....April 21, 1884.

Contagious diseases: Few cases of scarlet fever during winter; none fatal.

Diphtheria: four cases in one family, two fatal; promptly quarantined; no other cases.

CANNON FALLS, GOODHUE COUNTY.

May 10, 1884, Dr. A. T. Conley asks if the village council must adopt an ordinance providing and defining duties of board of health, or organize under State law.

Answer. Organize under the law.

TRACY, LYON COUNTY.

Health officer............................ ....H. M. Workman, M. D.
Date...May 16, 1884.

Submits certain questions to the board:

As to forbidding the pouring of house slops and laundry water into a stream running through the town.

Answer. Yes; your right and duty is to forbid the soiling of such stream, whether used for domestic purposes or not.

Third. When pigs are kept in pens inside the limits, can we order them removed?

Answer. Yes, if in your judgment a nuisance.

Fifth. What to do with hog pen in which pigs are fed with bodies of dead animals, and soil saturated with decayed animal matter?

Answer. Plow it up and sow with cabbage, celery, corn, or the like.

Sixth. Whenever a nuisance is removed by order of board, is expense charged against that piece of property or is it *pro rata?*

Answer. See the law.

Seventh. Can we forbid the throwing of paper and straw, etc., into the street?

Answer. Yes, as garbage.

The annual inspection should be thorough and local board should pay the necessary expense.

MONTICELLO (VILLAGE), WRIGHT COUNTY.

Health officer ....A. A. Noyes, M. D.
Date...May 26, 1884.

Infectious disease: None since last report.

Sanitary condition good.

TOWNSHIP BOARD OF AUDUBON.

Dr. A. J. Abbot, health officer, under date May 30, 1884, submits report:

Board appointed May 1st. First meeting, eighth. General resolutions and orders issued, which subsequent inspections show obeyed. May 28th, second meeting. Warning of two days to delinquents in scavengering when job was let to contractors. Board insisted on monthly disinfection of privies. No infectious or contagious diseases.

FARMINGTON, DAKOTA COUNTY.

Health officer..D. E. Abell, M. D.
Date...May 31, 1884.

Third annaul report.

Board met and issued inclosed poster. People responded generally. Few received personal notice.

Infectious diseases. None during year.

CLEAN UP!

It is now established by the best authorities on sanitary science, that many of the most formidable diseases which affect the human race are caused directly or indirectly by filth, and, therefore, prevention is possible. By draining every filthy place and removing as far as possible all sources of atmospheric contamination. By cleansing and disinfecting all privy vaults, cesspools, hog pens, stable yards, street gutters, stagnant waterways, slop drains, house and barn cellars, refuse deposits, etc. Therefore, the legally qualified board of health for the village of Farmington, do hereby give official notice that all such places as above mentioned, in said village of Farmington, must be cleansed, and all filth, garbage, rotten fruit, vegetables, or other substance liable to decomposition, must be removed before the first day of May next, under penalty, by law in such cases made and provided. And furthermore, from this date, all persons are forbidden to deposit in any street, alley, lane or other passageway in said Farmington, any animal or vegetable refuse or other substance liable to decomposition under penalty of fine and costs, as by law in such cases made and provided.

Liberty is hereby given, as usual, to dump any refuse dirt, shop sweepings, or garbage not liable to decomposition into the excavation near the bridge on the Lakeville road, the same being subject, however, to inspection and order of removal by said board of health.

E. D. ABELL. M. D.,
I. R. SANDERSON,
Board of Health.

Farmington, April 19, 1884.

ST. CLOUD, STEARNS COUNTY.

Health officer.................................A. O. Gilman, M. D.
Date...June 2, 1884.

Annual report.

Infectious diseases: A few sporadic cases of diphtheria and scarlet fever during last year. Quarantine regulations duly enforced.

General health of city, good; due mainly to efforts of majority of citizens for carrying out sanitary suggestions. Attention is called to necessity for a system of sewerage, especially for principal streets.

ST. PETER (CITY) NICOLLET COUNTY.

Health officer.................................D. B. Collins, M. D.
Date...June 26, 1884.

Just finished annual inspection and reported to city council. Twenty-two notices to abate nuisances served. Disposition of slops same this year as last; some other way should be devised, as there has been more or less annoyance from this source, particularly in densely populated portions of city.

Epidemic diseases: Two slight epidemics of diphtheria, both imported, and already reported in full to your board. There has been a cheerful and hearty compliance with all suggestions of local and State boards of health with respect to diphtheria. Have distributed the circulars of the State board and published extracts in the papers. In neither instance was there any spread of the disease in the city, but in the first case, sick over a saloon, before the authorities knew anything about it, there were a number from the country to visit the sick one, and, as a result, the disease was taken out and made its appearance in Nicollet and Blue Earth counties.

Scarlet fever and measles: A few cases, and an extensive outbreak of whooping cough. Cerebro spinal meningitis: but one case.

ROCHESTER, OLMSTED COUNTY.

Health officer..Dr. M. J. Mayo.
Date...July 16, 1884.

In spring, inspection of city required by law, found city in good condition with few exceptions, which were ordered corrected.

HOMER WINONA COUNTY, MINN.

Health officer ....Dr. J. Q. A. Vale.
Date...July 22, 1884.

Reports his appointment as member of the board and asks for circulars and instructions, which were sent.

BERNADOTTE, NICOLLET COUNTY, MINN.

August Samuelson......................................Town Clerk.
Date...July 30, 1884.

Reports town free from infectious disease. "Instructions received from State board and will be followed.

REPORT OF DR. L. W. BEEBE, ON DIPHTHERIA IN ST. CLOUD, STEARNS COUNTY.

Nov. 3, 1884.

"*C. N. Hewitt, M. D.*

DEAR DR.: Yours, of the 1st, received to-day. Replying, I enclose a brief report of our work. We were regretful that your cards for collection of data were not received till near the close of our opportunity for observation. Of the good effects of the quarantine no one can have a doubt who has treated cases without and then with. We meet with great lamentations from our German friends when attempting isolation of the cases."

Yours truly,
W. L. BEEBE.

SUMMARY.

"From Aug. 1, 1883, to July 20, 1884, there came under our care one hundred and five cases of diphtheria, with seventeen deaths. There have been reported to our local health board, by other physicians, during the epidemic and since, cases of diphtheria numbering fifteen, with two deaths. We are cognizant of fifteen other fatal cases not reported.

Some of these so-called cases of diphtheria are reported "cured in two days." Certainly, such success in the treatment of diphtheria is worthy of congratulations.

This epidemic was more severe in its commencement, a larger percentage of adults being attacked during the first few weeks, with a larger percentage of fatal cases. Of the first ten cases, seven proved fatal.

In two families the first case was croup or laryngeal diphtheria (no membrane being visible up to time of death), these cases being followed within a few days by one or more members of the family developing unmistakeable cases of diphtheria."

Dr. Beebe, having experienced in his own person an attack of typical diphtheria, relates his experience, illustrating the period of incubation, preliminary symptoms and duration of disease, believing his case not dissimilar in these points to the majority. His was the eighth case under observation. "Was called in consultation in the fourth case of our series, a young domestic, who had been treated for a week by one of our homeopathic brethren, who refused to quarantine the patient, saying it was not diphtheria but "putrid sore throat." (Died same day.) Dr. Beebe saw her at 11 A. M., Aug. 5, 1883. During the afternoon of the 7th he began to have headache, pain in the loins, pain in the long bones, elevation of temperature, sore throat, etc., in fact, just those symptoms which he had become well accustomed to during attacks of follicular tonsillitis, many times repeated in a period of fifteen years. He was confined to bed from the eve of the 7th till the 14th. As to treatment, we have nothing new to offer. Believing in the efficacy of the local application of Liq. Ferri Subsulph., especially where the membrane is extensive and dense, thinking that it produces an induration of the subjacent tissues, thus rendering the facilities for mycotic poisoning less advantageous. We desire to call attention to the fact that great care should be exercised in its application, for we have satisfied ourselves that its too frequent use or unintentional application to tissues free from membranous deposit will cause an invasion of membrane to that point.

Of the merits of Hydrarg. Chlo. Cor. we do not feel ourselves fully competent to speak, remembering that our impressions, that it does retard the progress of the disease and prevent the formation of membrane, should be taken in connection with the fact that our experiments with it were made during the latter part of the epidemic, when, as we have stated, its type was assuming milder form, and remembering, too, that we never had sufficient faith in the remedy to cause us to administer it uncombined with others.

In a combined treatment of good nourishment, whiskey in large quantities, Tinct. Ferri Chlo., Potass. Chlo., Hydrarg. Chlo. Cor. and locally Monsels Sol. inhalations of lime water, lactic acid, etc., how much of the effect is to be attributed to the use of any single part of the load of the "shot gun," we say not. What percentage would have recovered without medication could be pretty well estimated by the collection of the rapidly accumulating mortality statistics, resulting from the administration of a so-called "specific for diphtheria," very popular in this section.

Very respectfully yours,

A. O. GILMAN.
W. L. BEEBE."

C. N. HEWITT, M. D.,
Secretary State Board.

FOREST CITY, MEEKER COUNTY.

To the Honorable the State Board of Health of the State of Minnesota:

The undersigned, the local board of health of the town of Forest City, in the county of Meeker and State of Minnesota, beg leave to submit the following report, to wit:

On or about the 17th day of January, 1884, the chairman of the board of supervisors of said town received notice from Dr. F. E. Bissell, a practicing physician in the village of Litchfield, of the death from diphtheria of a child of A. J. Davis, in the village of Forest City, county and state aforesaid. And, under the advice and at the suggestions of Drs. F. E. Bissell and E. Hildebrandt, measures for the disinfection of the house and temporary relief of the family were taken, but without organizing as a board of health. Said child was about one year and a half old. The funeral was strictly private.

And we would further report that on or about the 1st day of February, 1884, notice was again received of another case of diphtheria in the same family of the said A. J. Davis. And that Dr. F. E. Bissell was at once directed by the chairman of said board of supervisors to promptly give all necessary medical attendance and attention to said case.

And on the 2d day of February, 1884, the board of supervisors of the town of Forest City met in response to a proper call for a meeting, and organized as a board of health and appointed Dr. Ernest Hildebrandt, a practicing physician, as health officer of said board. And the board here acknowledge the deepest obligations to Drs. W. E. Chapman and F. E. Bissell for gratuitous counsel and suggestions courteously and kindly extended at said meeting.

The house of the said Davis was quarantined by posting notice of diphtheria at the entrance.

And finding the said A. J. Davis and family destitute, partially in consequence of long continued sickness, medical attendance, a nurse, clothing and family supplies were procured for and furnished said family by said board of health to the amount of the accompanying memorandum. And on the 7th day of February the said child, aged about four years, died. Said board procured a coffin and, owing to the fear and excitement in the community, finding it impossible to procure help for the immediate burial.

took the corpse from the house and buried it with their own hands. The said board directed that all infected bedding and clothing be burned and that the house be thoroughly disinfected under the direction and supervision of the health officer, which directions the board believe have been substantially complied with.

Memorandum of bills for nurse, medical attendance and supplies for A. J. Davis and family, audited and paid by the town of Forest City:

Medical attendance, medicines, syringes, etc.	$42 00
Nurse, 8 days attendance at $1.50 per day and night	12 00
Coffin	6 00
Clothing, bedding and provisions	26 77
Seven days service by the board of health	14 00
	$100 77

T. C. JEWETT.
JOHN BURNS.
Local board of health of the town of Forest City, Minn.

ERNEST HILDEBRANDT, Health Officer.
Attest: FRANK McCONVILLE, Clerk.

DR. MOSSE'S REPORT ON DIPHTHERIA IN ROCHESTER, OLMSTED COUNTY.

In regard to diphtheria, I think I reported the outbreak in the family of Mrs. Cavanaugh, numbering eight,—four children under twelve years and four ranging age from sixteen years to adult age. The family had been using the excavation under the old one-story wooden structure in which they lived as a privy during the winter of 1884, and besides the excrements there was a load of decaying potatoes and cabbages in this unwalled cellar. During early spring the four children under twelve years who had been sitting around the stove immediately over the filth above described, almost continuously for months, were attacked, one after another, with fatal results in all the cases, the last one dying within ten days from time first one was attacked, the four cases lying sick at one time in the same room. The odor from these cases was unbearable, and could be smelled for rods away from the house despite the two or three hundred pounds of coperas and the large amount of carbolic acid used. The four adults who had been in the open air largely during the winter were not so severely attacked, and all recovered. None of these cases had been exposed to diphtheria, nor did the disease spread from them, as the strictest quarantine was maintained and the necessary fumigation and disinfection of the premises was carried out after tne disease subsided.

Very respectfully yours,
Dr. F. R. Mosse,
Rochester, Minn.

P. S.—I might say that although I saw these cases twice daily, and on one occasion had my face covered with material coughed from the throat of one of the fatal cases, yet no sign of the disease developed in my system.

A PLAN FOR SECURING NECESSARY FACTS RESPECTING THE ETIOLOGY AND CONTROL OF DIPHTHERIA.

It is the common experience of thoughtful physicians that in every outbreak valuable information is gained only to be lost for lack of *immediate* and *accurate* record.

To remedy this, various expedients have been used with indifferent success.

The present plan is that of the British Medical Association. Its apparent advantages are its suggestiveness and the method of report by erasure of statements not true of the case in hand. Each case is reported separately. The family record is consolidated on the last page. Upon receiving notice of an outbreak of diphtheria, a package of these cards is sent to the health officer or local board of health, and to the leading physicians of the infected neighborhood, by the secretary, generally with a personal letter asking their use.

The experiment has not yet been tried long enough to enable us to judge; but we have strong hopes that it will serve to collect accurately some of the valuable data hitherto lost.

With the co-operation of even a few accurate observers, the results will well repay the time and labor they may cost.

We invoke a thorough trial of the method, promising to collate and digest the data, and to send a copy of the report to every contributor.

The following is the card with preface explaining its use.

C. N. H.

Office Secretary State Board of Health.
Red Wing, Minn..................188...

The attached card is one of a series issued by this board for the collection of facts as to etiology, prevention and control of epidemic and infectious disease.

It is so arranged as to enable the busy practitioner, in the easiest, briefest and quickest way, to record facts on the spot. Answers are to be made, when possible, by *erasing* words. The attached sample of a "Filled Card" will explain the method. The answers are grouped as "General," "Family," "Personal." The first need be answered on but one card for one outbreak in one neighborhood,—and so for "Family," that record on one card suffices for a series of consecutive cases in that family. "Personal," of course, are to be answered for each case, and one card *always* given to each case. Under the law, health officers are required to use every effort to secure the record of each case of infectious and epidemic disease, on these cards. They will furnish them to all physicians in charge of such cases, and will return the filled card to this office. The cards will also be sent directly to physicians from this office, with stamped envelopes for reply.

All contributing facts in this way will receive the consolidated report, and their aid will be acknowledged therein. This plan is adapted from that of the Collective Investigating Committee of the British Medical Association.

C. N. Hewitt,
Secretary State Board of Health.

STATE BOARD OF HEALTH OF MINNESOTA.—REPORT OF FACTS IN ONE CASE OF DIPTHERIA.

Reporter's name..
Reporter's address..
Initials of patient's name..
Residence..............................Street.......................................
No..........County....................Township..................................
Section.................M. or F.................Age.....................
Date of first observation..
Date of last observation...

Note—Answers to be given when possible by *erasing* words. See circular letter and "filled" card. When filled return this card to

....

....

GENERAL FACTS.

Meteorology—For a week before the attack the air was dry, damp, cold, hot. (Thermometer, dry bulb, average.........°F. wet bulb, average.........°F.) *Weather*, mild, changeable, sunshine, clouds. *Prevailing winds*......... *Rain* without wind, with thunder and lightning, abundant, scanty, none.

Diseases recently prevalent in neighborhood.

....

Diseases of cattle prevalent in neighborhood.

....

FAMILY.

House—Locality of—high, low, dry, damp, exposed, confined, on open prairie, low land, high land, bluff, hill,.........side hill, cooley, valley, on flat, near standing or running water, surrounded by trees, no trees, shrubbery, grass.

Soil—Loam, sand, gravel, clay, made soil, of refuse, manure.

Subsoil—Gravel, sand, with clay, wet, damp, dry, subsoil water, depth of.........feet, water in well.........feet from surface.

Material of House—Log, frame, stone, brick.

Building—Old, new, light, dark, dry, damp, mouldy, clean, dirty, foul.

First story—.........living rooms, ...sleeping rooms.

Second story—.........living rooms, ...sleeping rooms.

Ventilation—Good, fair, none.

Warming—Stove, stoves, furnace, (cold air shaft, from cellar, out of doors) fire place or open stove in living, sleeping rooms.

Fuel—Wood, coal, artificial light, gas, kerosene oil, candles.

Number of families in house—......... adults ...., children ....

If any business done in house, what? ....

....

Cellar—Under part, or, entire house. *Walls*—None, stone, brick, loose, in mortar, cement. *Floor*—None, loose, matched boards, loose stones, brick, in mortar, cement, not drained. *Windows* ...., *Doors*, to house ...., to outside, ... Light, dark, dry, damp, wet, mouldy, clean, dirty, foul, decaying vegetable matter.

Disposal of House Slops and Refuse—On ground close to door, ... feet from; the cess pool .... feet from.

Cess Pool—None, ... feet from, above, below, house; .... feet from above, below, well. Is a hole in ground .... feet deep, not walled, with boards, bricks, stones, loose, in mortar, cement, empty, part full, dry, wet.

House Drain to cess pool or sewer, board, brick, stone, tile, iron, cement. Tested and tight, leaks, stopped up, begins inside, outside, foundations. Traps, none, kind of, efficient, worthless. *Water Closets*—None, number of, not water enough, not well trapped. *Ventilation*—None, good, bad. *Privy*—None, ... feet from, above, below, house; .... feet from, above, below, well; a hole .... feet deep, not walled with boards, stone, brick, loose, in mortar or cement. Not half full, contents semi-solid, fluid, not very offensive, no dry earth or other disinfectant used, clean, dirty, filthy. *Stables, Pigpens*—......... feet from, above, below, house; .... feet from, above, below, well, clean, dirty.

Drinking Water Supply—By public supply.

By Spring—.........feet above, below, level of house.
.........feet above, below, level of cess pool.
.........feet above, below, level of privy.
.........feet above, below, level of stable.
Protected from surface drainage.

By Well—......... feet above, below, level of house.
.... feet above, below, level of cess pool.
.... feet above, below, level of privy.
.... feet above, below, level of stable.
Protected from surface drainage. *Surface, Deep, Driven*, ... feet; *Artesian* .... feet. Depth of water in .... feet. *Supply*—Abundant, scanty, no curb, wood, brick, stone, with mortar, cement. Water tastes of............................ smells of .... tasteless, odorless.

By Running Stream or Slough—Througe wild, cultivated, lands, abundant, scanty, not exposed to surface drainage, from sewer, cess pool, houses, or cultivated fields. *Current*, rapid, slow, deep, shallow. *Rapids*.

By Rain Water—None. *Cistern*, wood, brick, stone, tight, leaking, open, covered; inside, outside, foundations; free of sewage, clean, odorless, foul, smells of..................................tastes of....................................

The Sick Room—Living room of family, bed room, first floor, second floor, occupied by patient alone, and nurse.........other adults,.........children,.........feet square,.........feet high,......... windows,.........doors, tidy, dirty, foul, dry, damp, mouldy.

Ventilation of—None, bad, good. *Warming*—By register, stove in room beneath, adjacent, by open stove, fireplace. *Light*—Abundant, scanty. *Bedding*—Blankets, quilts, sheets, not sufficient, clean, dirty, foul. Bed occupied by patient, with nurse, other adults, ...children.........of whom well......... sick. *Disease*—Epidemic, sporadic.

PERSONAL FACTS.

Patient was, before attack, strong, fat, weak, lean—had measles, scarlatina, rubeola, small pox, diphtheria, croup, erysipelas, enteric fever. Any other recent illness of patient or in family ...., Concurrent illness in family or neighborhood.............................Date of exposure to present sickness.............................Date of first symptoms..................................Previous attack of patient by croup, date...................place......................................by diphtheria, date...................place..................................by sore throat, date...................place..................................by scarlatina, date...................place.............................

Glandular Swelling—None, slight, marked, very great, early, late. *Membrane*—None, slight, marked, dense, thin. *Color* of, grey, white, pearl, on roof of mouth, on palate, on tongue, other parts................................, on wounds............................... Date of appearance.........................., of disappearance........ ....

Albumenuria, date of appearance..............................., of disappear nce....................................

Rash, duration of..........................., where..............................

Abscess—where..........................., when..............................

Patient or other member of family carried the disease to ...., and at time had no sore throat, or membrane in throat, was well.

Quarantine of Sick Room—None, strict. *Method* of....................... .... Exclusion of all but nurse, mother, father, other adults, children, neighbors.

Disinfection of Patient—None, discharges, caught in napkins, rags, and not burned, not collected, thrown on bedding, floor. *Bedding* and dirty clothes not put in hot disinfecting solution, put with other soiled clothing in common wash. Disinfectant used..., strength of..

Quarantine of Family—None, to house, lot, farm, occasional or frequent visits of neighbors permitted, when patient was better, well, after disinfection of room and clothing. *Duration* of quarantine after disappearance of membrane....................... .. *Method* of disinfecting clothing ....of room ...., of house...................................

Result—Date of recovery, of death.......................

Sequelæ.............................

LIST OF OTHER INHABITANTS OF HOUSE AT DATE OF LAST OBSERVATION.

Initials of Inhabitants of House.	Age.	Date of		Date of Exposure to Infection.		Other specific fevers from which they have suffered.	If any other specific fever occurred in same house give *date*.
		Present attack.	Previous attack.	In house.	Elsewhere.		

Month ....Day	1		2		3		4		5		6		7		8		9	
Temperature	a. m.	p. m.	a. m.	p. m.	a. m.	p. m.	a. m.	p. m.	a. m.	p. m.	a. m.	p. m.	a. m.	p. m.	a. m.	p. m.	a. m.	p. m.
Pulse	a. m.	p. m.	a. m.	p. m.	a. m.	p. m.	a. m.	p. m.	a. m.	p. m.	a. m.	p. m.	a. m.	p. m.	a. m.	p. m.	a. m.	p. m.

This space to be used for other facts than are called for in card, or for comments by reporter.

A STUDY OF DIPHTHERIA IN ST. PAUL.

The following plan and partial report was made by Dr. C. B. Witherle, of St. Paul, at the suggestion of the Secretary of the State Board of Health, and was to have been carried out at the expense of the board. The doctor received very little encouragement from his professional brethren, and for that and other reasons, the project was abandoned:

St. Paul, Jan. 23, 1884,
No. 12 West Third Street.

My Dear Doctor: I have prepared some tables, showing the history of diphtheria in St. Paul, which may serve as a fitting introduction to my report.

My plan of attack, as far as elaborated, is as follows, subject to your approval:

1. Investigation (personal) of special cases in regard to etiology according to your suggestions.

2. A house-to-house inquiry as to drainage and water supply at all houses where cases have occurred during the last year.

3. Location of all cases reported on a map of the city, the map showing the sewerage system.

4. Distribution of the cases amongst the schools. I suppose it is probable that much infection takes place in school-houses, and if any facts showing this should come out clearly they would be very effective with the laity.

I have a half dozen cases under personal observation already.

There are now thirty-eight houses placarded for diphtheria, and so far there have been nine deaths this month.

I shall be glad of any further suggestions from you, and I shall report progress at least once a week.

I inclose the tables which I spoke of. I hope to be able to send you something about the Manitoba House case next week.

Yours fraternally,
CHARLES B. WITHERLE.

DR. C. N. HEWITT.

TABLE I.

Year.	Deaths from all causes.	Deaths from Diphtheria.	Percentage of deaths from Diphtheria to deaths from all causes.	Death Rates.
1876	455	4	1 per cent.	16.8 per 1,000
1877	426	2	0.5 per cent.	15.2 per 1,000
1878	462	4	1 per cent.	15.4 per 1,000
1879	527	6	1 per cent.	13.5 per 1,000
1880	701	31	4 per cent.	15.6 per 1,000
1881	1,143	126	11 per cent.	19.7 per 1,000
1882	1,345	150	11 per cent.	17.9 per 1,000
1883	1,293	145	11 per cent.	14.7 per 1,000

The increase in death rate in 1881 and 1882 is just about accounted for by the increased mortality from diphtheria, but in 1883, with no decrease in diphtheria, the death rate has fallen to about the old figures.

In estimating death rate, the population was obtained in each year by multiplying the number of names in the directory by 2.5. This result in 1880 agrees closely with that obtained from the United States census.

TABLE II.

DEATHS FROM DIPHTHERIA.

Month.	1880.	1881.	1882.	1883.	
January	1	1	9	10	It will be noticed that in 1883 the cases are more evenly distributed according to seasons than previously.
February	1	5	6	11	
March	0	4	3	9	
April	0	1	4	8	
May	2	3	5	15	
June	4	3	9	16	
July	2	6	7	11	
August	4	17	13	13	
September	4	28	17	5	
October	3	22	37	11	
November	6	16	17	11	
December	8	20	23	25	
Total	31	126	150	145	

STATISTICS RESPECTING

SCARLET FEVER, TYPHOID FEVER

AND

OTHER DISEASES DURING PERIOD

BETWEEN

JAN. 1, 1883 AND JULY 31, 1884.

TYPHOID FEVER

IN ST. PAUL FOR YEAR ENDING MAY 31, 1884.

	No. Deaths.
June, 1883	0
July, 1883	2
August, 1883	9
September, 1883	13
October, 1883	5
November, 1883	6
December, 1883	2
January, 1884	0
February, 1884	1
March, 1884	3
April, 1884	0
May, 1884	5
Total	46

Number sick not reported to health officer.

SCARLET FEVER

IN ST. PAUL FOR YEAR ENDING MAY 31, 1884.

	Number Reported.	Number Deaths.
June, 1883	13	6
July, 1883	6	1
August, 1883	5	0
September, 1883	2	1
October, 1883	2	1
November, 1883	9	0
December, 1883	18	1
January, 1884	19	2
February, 1884	18	1
March, 1884	16	2
April, 1884	23	1
May, 1884	8	3
Totals	129	19

1883.	St. Paul.							Minneapolis.						
	Cholera Infantum.	Cerebro Spinal Meningitis.	Diphtheria.	Scarlet Fever.	Typhoid Fever.	Measles.	Small Pox.	Cholera Infantum.	Cerebro Spinal Meningitis.	Diphtheria.	Scarlet Fever.	Typhoid Fever.	Measles.	Small Pox.
January	......	2	10	......	5	......	......	......	5	14	1	7	......	3
February	......	1	10	2	5	......	......	......	3	6	......	10	......	2
March	1	3	8	......	3	......	......	......	......	27	......	......	......	......
April	1	1	8	2	1	......	......	......	4	7	......	6	......	1
May	.. ..	3	17	3	5	......	......	1	5	12	......	3	......	......
June	4	6	16	6	......	1	1	1	2	8	5	3	......	......
July	44	......	11	1	2	1	2	30	1	10	......	3	......	......
August	36	......	13	......	9	......	......	42	3	4	1	13	......	......
September	10	1	5	1	13	......	......	12	......	10	3	21	......	......
October	3	......	11	1	6	......	......	2	5	13	3	12	......	......
November	......	......	11	......	6	......	......	......	2	11	......	12	......	......
December	......	......	25	1	2	......	......	......	4	13	1	4	......	......
1884.														
January	......	9	15	2	......	......	......	......	2	10	2	1	......	......
February	......	......	6	1	1	......	......	......	1	7	6	1	......	......
March	......	......	10	2	3	......	......	......	......	4	......	4	......	......
April	......	......	7	1	......	......	......	......	1	2	1	2	......	......
May	2	......	12	3	5	5	......	1	4	11	2	1	3	......
June	10	7	5	2	3	7	......	4	1	12	......	4	......	... ..
July	80	17	5	1	1	4	......	82	1	12	2	3	5	......
	July. 1884	July. 1884	December. 1883	June. 1883	September. 1883	June. 1884	July. 1883	July. 1884		March. 1883	February. 1884	September. 1883	July. 1884	January. 1883
Maximum	......	......	......	......	......	......	......	......		......	......	......	......	......
Minimum	......	......	......	......	......	......	......	......		......	......	......	......	......

SCARLET FEVER IN MINNEAPOLIS.

January 1, to November 2, 1884, number cases	93
January 1 to August 1, 1884, number deaths	27
January 1 to November 2, 1884, First Ward, number cases	8
January 1 to November 2, 1884, Third Ward, number cases	10
January 1 to November 2, 1884, Fifth Ward, number cases	35
January 1 to November 2, 1884, Sixth Ward, number cases	14
January 1 to November 2, Seventh Ward, number cases	4

SCARLET FEVER IN BLUE EARTH CITY, FARIBAULT COUNTY.

March 14, 1884, Dr. C. J. B. Hursh, Health Officer, writes:

"I have to report four cases scarlet fever in suburbs this place reported yesterday, in two houses quarantined and all other measures taken."

March 15th, secretary replied, inclosing copies of laws and instruction.

LEPROSY.

BAXTER, LAC QUI PARLE COUNTY.

C. A. Anderson, chairman board supervisors, under date July 21, 1883, writes:

"We have a case here of leprosy; neighbors feel alarmed about its being contagious. We have no hospital. He is a resident of Dakota; been here two months; getting worse all the time. Have you any place to put him?"

Secretary replied, July 26, 1883:

"Inform your people that Norwegian leprosy is not contagious (in the ordinary sense). You cannot interfere with that man. He is to be pitied rather than feared. Send copies of laws relating to infectious diseases."

LEPROSY IN MINNESOTA—REPORT TO THE STATE BOARD OF HEALTH OF MINNESOTA, BY DR. CHR. GRÖNVOLD,

Member of the Board and Chairman of Committee on Leprosy.

There has lately been written much about a centre of leprosy in the Northwest, from which the disease is said to be spreading. It may be interesting to see how facts support this statement.

As early as in 1864, the condition of the lepers among the immigrants to the Northwest had been an object for the attention of medical men from their old country.

In that year Dr. J. H. Holmboe, surgeon in charge of the Hospital for Lepers, in Bergen, Norway, visited this country to study the influence that change of climate and other relations had on the development of the disease. He found twelve cases, of which two had originated in this country, while one, which came here leprous, had got well. His impression was, that their condition of health was better than it would have been if they had stayed in the old country.

In 1869–70 the settlements were again visited by a medical gentleman from the old country, the late Professor William Boeck, of Christiana, Norway, well known in medical literature for his writing on leprosy and syphilis. The result of his investigations in the Northwest settlements may be read in *Nordiskt Medicinskt Archiv*, Band III., No. 1. He found in the three States, Wisconsin, Iowa and Minnesota, eighteen cases of leprosy, all of which had come from those parts of the western Norwegian seacoast, where the disease is endemic. Nine cases had the anæsthetic form, three the tubercular, while in six cases both forms were represented at the same time, or one superseding the other. In regard to the time of the appearance of the disease, in nine it had commenced already in the old country, and of these, five had lepers in their family, while four did not know of any leprous relations.

In the other nine cases the disease first commenced in this country. Of these, eight had lepers in their family, and the disease broke out respectively, two and a half, three, three and a half, five, six, eight, nine and a half and ten years after their arrival. These eight cases that were developed on American soil, may depend on heredity, or they may have been caused by contagion in the old country, the only place where it is probable that they could have met with other lepers, or the disease may have developed from a miasma in the old country. Either of the last two suppositions being right, the time of incubation will for two of the cases be nine and a half and ten years. Prof. Boeck considers them all as depending upon heredity in direct or lateral line. If he had any doubt, he says, in regard to the propagation of the disease by heredity, these cases would have convinced him.

As an instance, here is one of the cases described in the above name *Medicinskt Archiv:*

"S. S., forty-five years old, came, fourteen years ago to America, to the place where he now resides, and was in every respect, perfectly well. His father had died, about fifty years old, in the Lepers' Hospital, at Bergen, his brother and sister died leprous in the old country, one and four years ago; his father's sister had also had the disease. S. continued to be in good health after his arrival to this country, for nine and one-half years. Four and one-half years ago he commenced feeling heavy and drowsy, and two years later, after a violent cold, tearing and fleeting pains announced themselves in the hands and feet, and also in the upper and lower extremities, and at the same time there was swelling of the same parts and the face, and an eruption of red spots appeared. the pains were so violent that he was obliged to stay in the house from January to May, and when he was able to get out of bed, his strength was gone, and he discovered that his sensation was very much lessened along the peroneal side of the feet and legs, and on the ulnar side of the hands and arms. Since that time he has always suffered from fleeting pains in the extremities, and feels heavy and drowsy. 'I will never have a day of health any more,' he said. Sensation is at present very week in hands and feet, as well on the outer as on the inner side, from the hands along the arms to the shoulders, and from the feet along the legs and thighs to the neighborhood of the hip. The muscles of the right hand, between the first and second finger, and those of the fifth finger, are considerably wasted."

This patient left the old country in good health, and continued to be so for nine and one half years after his arrival in this country, in a place where there were no lepers before, and where it is not known that he has had communication with any.

The last of the nine cases, developed on American soil, did not know of any leprous relation, and may possibly be referred to contagion. The case is, in short, as described in the above named *Archiv:*

"B. J. is thirty-nine years old; came to this country fourteen years ago; has for twelve years suffered, and is yet suffering from rheumatic pains in the extremities. Recently, after a day's hard work, she had in the evening a violent chill, and the next day there appeared spots on the arms, and successively on the lower extremities, chest, back and face. These spots are distinctly morphœa spots, in some places slightly elevated. In them there is either complete anæsthesia, or very little sensation; outside of them the sensation is normal, except on the external side of feet and legs. Her appearance is very good. She is fleshy, has good appetite; the bowels are a little constipated; menstrual flow scanty. She does not know of any leper in the family. She has once, six or seven years age, been in the home of a leper. By others, it is said, that she, for some time, has taken care of a leper."

Prof. Boeck had his doubts whether this person did not also belong to a leprous family, and whether the disease was not due to heredity.

The professor was of the opinion that lepers here are better off as regards their disease than they would have been in the old country. "They have come away from the place where we see leprosy may originate spontaneously, and which certainly will favor its development, when the disposition thereto is inherited. They have settled on fertile lands, where they certainly have to work hard to make a living, but they generally undergo no hardships, as we in Norway understand the term. Here is no work that can be compared with that done at the midwinter fisheries in open sea off the Finmark coast, or the hardships suffered while tending the cattle on the high mountain plateaus, which causes so often bring out the latent leprosy.

Since Prof. Boeck's visit in 1869–70, investigations have been continued in Minnesota, regarding the occurrence and character of the disease in that State. In 1871 a case of the disease was presented to the Minnesota State Medical Society, at its meeting in St. Paul.

Besides some cases which cannot be traced, at present six cases and their whereabouts are known, all emigrated from that part of western Norway where the disease is endemic. None of them are confined to bed, and most of them are able to perform their daily duties.

The following table will show some of the particulars of the cases:

		Age.	How long leprous.	How long in this country.	Form of disease.	Leprous Relations.
*Case I.	Male	58 years old	18 years	27 years	Anæsthetic	Father, and father's sister, brother, sister, cousin.
Case II.	Male	29 years old	7 years	20 years	Tubercular	Father, two brothers.
Case III.	Female	29 years old	7 years	16 years	Tubercular	None.
Case IV.	Male	35 years old	16 years	12 years	Anæsthetic	None.
Case V.	Male	67 years old	Prodromes in the old country	11 years	Anæsthetic	None.
Case VI.	Male	44 years old	10 years	15 years	Anæsthetic	Probably a brother.

*Case I. is described by Prof. Boeck as No. 1, and is the one described above as "S.S." It is the only case, yet alive, of them he saw in Minnesota. He has, since the Professor saw him, been tolerably well, until the latest years, when the disease has made a quicker advance.

It will be seen, that two of them have the tubercular form, while four have the anæsthetic; in two of these—IV. and VI.—a little complicated with the tubercular. Two of them—IV. and V.—had the disease in the old country; but of these, one did not suffer much from it before seven years after the arrival to this country.

Of the other four, three know of leprous relations, while one

—III.—denies that the disease has ever been in her family. She is from a district where there are many lepers—Balestrand in Sogn. The main features of the case are:

Case III. came to America when she was thirteen years old, in company with a sister of her mother, sixteen years ago, and has all the time since lived near the place she first went to. The first two years she lived with her aunt, but, after confirmation, she served as housemaid in families of the neighborhood, until she, seven years ago, discovered the first signs of the disease. After a severe illness, she says, caused by cold, the legs swelled and some vesicles appeared, first on one, later on both ankles, followed by sores.

At present she exhibits the tubercular form of the disease, and presents a very repulsive appearance. The complexion is pale, or rather dirty white, the skin of the face thickened and rough. Tubercles, some suppurating, some torn by scratching, are seen over the eyes and on other places of the forehead, on the right nostril, and on the cheeks and chin; also on the ulnar side and back of both hands, where, as well as on the outer side and back of the feet and lower part of the peroneal side of the legs, is some anæsthesia. The voice is hoarse and rough. The nose seems flattened on account of the alæ spreading out. The lobes of the ears and the lips, especially the upper, are very much thickened and elongated. The eyebrows and eyelashes are gone, conjunctiva dirty white, with a troublesome secretion; cornea somewhat opaque. Her eyesight is very much impaired. She denies having any discoloration of the skin, any sores or tubercles in other places than those above named and on the ankles, where there are deep ulcers, laying the bone bare. She does not suffer much; only once in a while she feels a little oppression and some slight pain in the chest and back, but this, she believes, is only caused by weakness.

Appetite is irregular, the sleep is commonly good. Menses commenced to be scanty when the disease broke out, and stopped soon. She feels worse in the spring and fall, but is seldom confined to bed. She takes cold easily. Like almost all lepers here, she ascribes her disease to cold. She suffered so from cold, she explains, in a place where she was working, that she then and there got the disease. It is not know by herself or anybody else, that she ever met with a leper in this country. She must have carried the germ of the disease with her from the old country, whether it has been communicated by contagion or a miasma, if she is right in her statement that the disease has been neither in her father's nor mother's family. The disease became evident when she was twenty-two years old, and had lived in this country nine years. She will not remember any prodromes; has probably tried to conceal her condition as long as possible. She tries yet to put the best appearance on her miserable condition.

Ten lepers of the immigrants are known to have died in Minnesota since the settlement of the country, all of them males. Of these seven died in the last seven years, and the following table will show some of the particulars of the cases.

	Age at time death.	How long leprous.	How long in America.	Form of the disease.	Leprous relations.
*Case I.	49 years old	24 years	19 years	Anæsthetic	Brother of mother's father.
*Case II.	56 years old	14 years	24 years	Tubercular	A cousin.
*Case III.	35 years old	10 years	9 years	Anæsthetic	Father's brother.
Case IV.	About 30 years old	3 years	13 years	Tubercular	Brothers. Father and brother diseased.
Case V.	About 30 years old	12 years	15 years	Tubercular	
*Case VI.	62 years old	30 years	21 years	Tubercular first 7 years, afterwards anæsthetic. Disease stopped before death	Brother and father's brothers.
Case VII.	30 years old	....	10 years	Anæsthetic	Mother's brother.

*Cases II. and VI. were seen by Prof. Boeck in 1870, and described by him in the above named journal, as observations three and two. Case II. got steadily worse until death, eight years after the Professor saw him, but in No. VI. the disease made no advance after the time Prof. Boeck saw him. He was in good health for many years, with the exception of the anæsthesia in the places already attacked and an always open and discharging ulcer under one foot. When this discharge stopped, about fourteen days before his death, vomiting set in, which became more and more distressing, so he could keep nothing in his stomach. He was not confined to bed, but moved about as usual, until the day and hour of his death, which occurred thirty years after he was attacked, seven years after Prof. Boeck saw him and described his case. Case I. has been described in the January number of Arch. of Dermatologie for 1879.

It will be seen that three of them had the anæsthetic form, and died twenty-four, ten and thirty years after they got the disease. The last case, No. VI., Boeck's observ. 2, is an instance of one form changing into the other. The disease commenced in the tubercular form and continued so for seven years. After a violent fever it changed into the anæsthetic. Three had the tubercular form and died after having had the disease fourteen, three and twelve years. Case II. got the disease ten years after his arrival in this country, when he was forty-two years old.

All of them had lepers in their family; three of them had the disease in the old country; three got it here; two, ten years, and one, three years after their arrival. Four of the lepers—two of them living yet—have full grown children, born in America; two have also full grown grandchildren. One (No. VI. of last table—Boeck's Observ. No. 2) has fifteen grandchildren, aged from two to twenty-two, and two great-grandchildren, and in none of them has any sign of the disease been discovered. The other (No. 1 of the first table—Boeck's observ. No. 1), who belongs to a family so strongly infected with leprosy—lepers were his father and father's sister, his brother and his sister—has full grown children, and many grandchildren of an age up to seventeen, all in good health.

The suggestion of the above facts, as far as they go, seems to be that the disease is not so easily acquired here in the Northwest as in the old country, be it by heredity or contagion. The question of the way in which the disease propagates has been discussed in the first report of the State Board of Health, 1873. Later experiences have modified opinions in this respect. A micrococcus, which constantly is found in leprous products, is considered the means of conveying the disease, although experiments with grafting on animals so far have had only negative results. The developments on the Sandwich Islands point decidedly to contagion. Twenty years ago the disease was there unknown, and now at least two per cent of the whole population is attacked. Comparing this state of affairs with the experience from Minnesota and other places, it is obvious that the propagation of the disease by contagion will depend largely on local and other circumstances. Here all cases known are from the places in the old country where the disease is endemic, and have probably carried it with them from there, and none of their descendants born here is yet known to have acquired the disease. The dry climate is possibly not so favorable for the development and the communication of the disease, that at present mostly belongs to the sea coasts and islands. The chances of contagion are decidedly less here than in the old country; there is greater cleanliness, as a consequence of greater economical prosperity, and the new built houses of the first settlers in a new country furnish no filthy nests for contagion.

But once acquired, the disease seems to run its regular course without abatement.

CH. GRONVALD, M. D.,
Chairman Committee on Leprosy.

Norway P. O., Goodhue County, Minn.

MINNESOTA STATE BOARD OF HEALTH.

CIRCULAR NO. 4, 1884.

GLANDERS.

An Abstract of the Latest Information as to its Causes, Prevention and Control; prepared, by order of the State Board of Health for public distribution, by the secretary.

AFTER READING THIS PAPER CAREFULLY, PLEASE PRESERVE IT FOR FUTURE USE.

PREFACE.

In view of the presence of glanders in its various forms in different parts of the State, the following paper has been prepared. The chief authorities consulted have been Flemming, London, 1874, Galtier, Paris, 1880, and the object in view is to enable horse owners to know something of the disease, and to act more intelligently in co-operating with their local boards of health, in the effort to crush it out or to limit its ravages.

This circular may be obtained of the local health officers, any member of the State Board of Health, or of the undersigned.

CHAS. N. HEWITT, M. D.,
Secretary State Board of Health,
Red Wing.

GLANDERS AND FARCY.

Glanders and farcy are names given to two varieties of the same disease, most common in the horse or mule, but capable of infecting other animals and particularly man.

The term glanders is commonly applied to the disease in the nose, air passages and lungs. Farcy to the same disease, located chiefly in the skin and tissues underneath, and in the lymphatic vessels and glands there located. These two forms of the disease may occur in the same animal singly, at the same time, or successively; and the virus of glanders may produce farcy, or *vice versa.* They are one and the same disease.

Glanders also exists as an obscure affection of the lungs often confounded, in horses, with other lung diseases, but this form is comparatively rare. It usually occurs in connection with the better known forms above described.

In any form, glanders is a contagious and infectious disease. It is transmitted by direct contact, by means of infected things, and perhaps in the air. It is always incurable. It is most frequent in the crowded stables of cavalry, in livery, and street railway or contractors' barns, if they are not kept in the best sanitary condition. It is being distributed through our State by unprincipled horse-dealers, from the cities, who make a business of horse trading at low prices and in common stock, and by others who trade in horses.

Farmers, teamsters and draymen cannot be too careful in demanding the name and responsibility of the seller of horses, if not already well known, and the history of the animal for at least three months before purchase. It should be known that a horse in the early stage of chronic glanders may, by certain injections and remedies, be made to have an appearance of health which, however, a few days of hard work will remove.

It would be a safeguard to require such work of the animal offered for sale, of whose condition one is not sure. The experiment, if only for a day or two, will develop evidence of "condition" which will help to a judgment of the health or freedom from disease of the animal. In times like the present, apply the tests here suggested and the failures will be few.

Of course it is understood that when possible, a thoroughly competent veterinary surgeon should be consulted, but in well marked cases of glanders in any form, the evidence is so clear that no intelligent horseman can be deceived, especially if he quarantine the animal for a sufficiently prolonged observation.

Both glanders and farcy may be either acute or chronic, depending largely, perhaps, upon the virulence of the poison, or the sanitary condition and the care of animals.

The chronic form is the most common in ordinary work horses.

The essential symptoms of glanders are local. They are discharge from, and ulceration and thickening of, the membrane lining the nose, and the enlargement of the gland under the lower jaw, called the submaxilliary, on one or both sides, as one or both sides of the nose are affected. At first the discharge is glutinous, adhering to the skin and hair around the nostrils, forming soft greasy-feeling crusts of a deep brown color. Later the discharge becomes matter (purulent) of a slightly greenish tint, which is regarded by many as very characteristic.

The ulcers in the nose are of two kinds: one, veritable chancrous ulcers with a raised and hardened base, the other, simply a distruction of the lining membrane of the nose, in patches. They will usually be seen on holding the horse's nose to the light, and distinguished by the touch of the finger. In chronic glanders the ulcers are usually few and confined to one nostril. At first they are little lumps under the membrane the size of a small pea, and perfectly defined. When touched by the finger they feel like a foreign body fixed on the membrane. Their color is yellowish with a border of inflamed tissue around them. They slowly soften, and in two or three days open, discharging a drop or two of matter and leaving a little depression on a hardened base which continues to enlarge, showing no disposition to heal.

The third characteristic symptom is the enlargement of the gland under the jaw which induced farriers to call it "glanders." It always occurs with chancres in the nose. The gland is increased from the size of a chestnut to that of a small apple; larger, as a rule, from behind to before. It is always irregular to the touch; lumpy and nodulated. At first it may be a little tender, but in a few days it becomes hard and fixed to the other tissues or to the jaw by a fibrous foot-stalk (pedicle). It is then indolent and never softens down to matter (suppurates).

To these characteristic symptoms may often be added symptoms of a constitutional character. Fever, debility, loss of appetite and of weight. In chronic glanders, two at least of the local characteristic symptoms are usually present. The pulmonary (lung) variety is much more obscure and therefore more dangerous.

The only safety is, in presence of the disease in the neighborhood, to suspect and quarantine cases of prolonged cough or loss of "condition" till sure of their character.

In acute glanders, the symptoms characteristic of the disease follow upon high fever and serious constitutional disturbances. A very few days suffice to develop the well marked disease. Farcy is, perhaps, the most frequent variety of the disease. The symptoms are external and slow of development. It most frequently attacks common-bred, old and worn-out horses, rarely the young and well fed, or the mule.

Preceded usually by some constitutional disturbance, fever, etc., the local symptoms consist in the appearance of superficial, indolent tumors or ''farcy buds,'' often united by corded swellings in or under the skin in various parts of the body. The ''buds'' soon ulcerate and become chancrous ulcers with a hardened base. The number varies greatly. The location is where the skin is thinnest and most sensitive; on the face, in the jugular space of the neck, inside the limbs. The ulcer has a constant tendency to extend, rarely to heal. The matter drying makes a yellowish crust over the sore. The irregular outline; the cup-like sore; the hardened base; these are characteristic signs.

Acute farcy is distinquished by the constitutional symptoms and the rapid development of the local sores.

In acute glanders or farcy, death may be, and usually is, prompt (eight to fifteen days). Chronic glanders and farcy may continue for months or years. It must be thoroughly understood that the universal experience is, that neither form are ever recovered from. Chronic farcy has apparently been recovered from, but the recovery is only apparent and temporary. The chronic form of glanders is most common with the horse. Acute farcy is the rule.

In forming an opinion of the disease, remember:

1st. In either form of the acute disease, a very few days of observation will settle the matter.

2d. In the chronic form of glanders, the presence of the discharge chancres, and the enlarged gland, under the jaw are certain evidence. In all doubtful cases of either, the common sense rule is to seclude the animal. If not too sick for work, one or more suspected animals on a farm may be worked apart from all others, using separate stables, barn furniture, harnesses, etc.

The most difficult feature of the disease is the uncertain period of incubation. As a rule, the incubation, after ordinary exposure, is from three to six weeks. It is a common practice abroad, in suspected cases, to bleed the animal or give strong purgatives. Wounds, as that made by the seton, are by some used as tests, as the sores in infected animals speedily take on the peculiar character of glanders. One attack does not protect from another because no true recovery takes place from the first attack.

Local boards of health, in the presence of the disease, should;

1st—Seclude all infected cases, confining them to their owner's farms or stables, and permitting their use only where they cannot infect other horses.

2d — Keep a close watch over livery stables and herds of horses, particularly those brought into the town for sale.

3d — Enforce strictly the law forbidding the running at large, or sale of glandered animals. (Sec. 13, General Laws, 1868, chapter 59, as amended by General Laws, 1879, chapter 46).

4th — In all cases of doubt, do not enforce the slaughter of the animal so long as efficient quarantine is maintained under the observation and direction of the board, till all doubt is removed.

5th — The law makes no provision for compensation for loss to the owner of glandered horses. Considering that the malady is incurable, and that the life of the owner, of his servants, or that of other individuals, is in danger, the amount could not be much more than the value of the animal's carcass which is nothing. In instances where the owner has neglected to report the case, or has concealed the facts, any compensation should be out of the question.

6th — When the local board of health are satisfied upon what they believe competent and sufficient evidence of the existence of the disease, they should order and compel the death of the animal, the slashing of the carcass, its burial, and the disinfection of the stable and things used by the slaughtered animal.

The thorough ventilation and drying of the stable and utensils (after fumigation by sulphurous acid) for at least a week, to be followed by whitewashing of walls with quick-lime, and the washing of mangers and utensils with hot soap suds, will effectually cleanse all which is worth preserving. Bedding and tainted fodder, hay or grain, should be burned.

The forms of official notification, and rules and regulations will be furnished on application.

GLANDERS,

FOR PERIOD BETWEEN

JANUARY 1, 1883, AND JULY 31, 1884.

GLANDERS IN ST. JAMES.

Under date August 9, 1883, Mr. C. R. Bacon, St. James, addressed secretary:

"Within a few days a pair of horses were stabled in our village and reported to me as having glanders; examined and found one far gone with farcy, and the other in first stage of farcy; am at loss what action to take in the premises, and what to do with the barn after the horses are disposed of."

Secretary on receipt, on 10th, telegraphed, "quarantine." And also telegraphed attorney general asking whether local boards of health can control glanders in horses.

Assistant Attorney General E. T. Lane telegraphed same date: "Yes, as a nuisance; cause of sickness or disease?"

Secretary then wrote to Dr. Bacon, giving the above opinion and calling attention to section 6, chapter 132, Laws of 1883, also to page 7, of copy of Laws of Minnesota, relating to health, which was sent, and page 10 of same. "You will find it to be the duty of local boards to enforce that law. Base your action upon the fact that glanders, or farcy are communicable to man."

GLANDERS IN MARSHALL COUNTY.

Under date May 1st, 1884, Dr. Hand wrote: "Please find Mr. Hughes' letter inclosed."

Under date April 26th, John Hughes, chairman of board of county commissioners, Marshall county, wrote to secretary:

"At their last meeting our county commissioners passed a resolution instructing their chairman to correspond with you in regard to engaging a veterinary surgeon or practical horse doctor to examine the horses of Marshall County and condemn such as are found to have the disease called glanders, the board thinking that you would be able to give them advice as to the proper steps to be taken."

April 30th, 1884, secretary replied:

"The power of dealing with infectious diseases belongs to the local board of health under the inclosed law and under the same law to this board belongs the general direction of the matter. I send veterinary surgeon to examine and report to me. He will bring a letter from Dr. Hand, of this board. Give him every assistance in your power."

April 30th, secretary wrote to Dr. Hand, requesting that a competent veterinary surgeon be sent, and "to make a thorough examination and report the exact facts to Mr. Hughes. To put the advice he may give Mr. Hughes in writing and serve a copy thereof to this board."

May 3d, Dr. Price reported to Mr. Hughes in writing:

"On examination to-day, find three bay horses on Mr. Albert Proulx's farm, suffering from chronic glanders. As it is highly contagious, I advise enforcing the law regulating the disposal of diseased animals. Every precaution to be used to prevent their spreading the matter among healthy animals. From inquiries among people I conclude the disease is very prevalent around Argyle and recommend you to ascertain the names of persons owning horses showing the slightest symptoms of the disease. and when this is done have some qualified veterinary surgeon examine them and pronounce such as have the disease as glanders. I regret that you were unprepared for my visit and that in consequence I could not examine more of the suspected ones. * *

RICHARD PRICE."

Richard Price submitted a report to secretary, May 4th, 1884, appended.

May 7th, 1884, Mr. J. Hughes wrote again to secretary. The letter was referred to Dr. Hand in secretary's absence but was returned to secretary upon his return for answer.

Mr. Hughes' letter was as follows:

Reporting what Richard Price had done and postponing further action till he could make a list of suspected animals. "Dr. Price staid but two days owing to the scattered ownership of diseased animals. We thought it best to defer action till we could make a list of suspected animals, when we will let you know, hoping that you will let Mr. Price or some other competent person come and finish the examination."

Under date May 17th, John Hughes wrote:

"Horse condemned by Dr. Price at Argyle, this county, has become a public nuisance. What can be done in the matter? Dr. Hand referred me to inclosed laws which he did not send."

May 30th, secretary replied, sending copy of chapter 102, Laws of 1883, calling attention to the fact that the local board of health and board of supervisors have authority to deal with glanders as a disease liable to be communicated to man. This board of the town of Argyle where the disease is reported must condemn and order the slaughter of infected horses and make such compensation to the owner thereof as is just. A glandered horse is of little value to the owner and a source of danger to himself, his family and his hired men. Other town boards must do the same thing, and under section twenty-eight, Laws of 1883, provide for expense thereof."

On same date, secretary wrote to board of supervisors, town of Argyle, calling attention to provisions of the law and giving such instructions as are given by this board upon glanders.

Copies of law, May 15th, were served on boards of supervisors of every town in Marshall County, nineteen townships.

REPORT OF RICHARD PRICE, V. S.

ST. PAUL, May 4, 1884.

Dr. C. N. Hewitt, Secretary State Board of Health, Red Wing, Minn.,

Sir: By orders received from Dr. Hand I hasten to report the result of my visit to Stephen, Marshall County. On calling at Mr. Hughes' farm I found him unprepared for a thorough investigation of the disease "glanders" as he did not expect the State Board of Health would have sent anyone so soon. However, after urging upon him the necessity of immediate action in the matter, he left his seeding, at which he was busily engaged, and we proceeded to as many farms as the time would permit.

At Mr. A. Proulx's I was shown three bay horses and found them all suffering from the chronic form of glanders which is the most dangerous and deceptive on account of the animal living for an indefinite period while diseased and infecting nearly every horse or perhaps other animals with which it comes in contact, directly or indirectly, through means of water buckets, troughs, hitching posts, etc., etc.; in fact anything to which the virus may cling, and so spreading the disease all over the country. Some may die in a few days from acute glanders or farcy, and others develop the chronic form and so become a fresh disseminator of the disease. I notified Mr. Proulx of the nature and danger of the malady and recommended Mr. Hughes to enforce the law in regard to such cases.

On the other farms visited I found no diagnostic symptoms amongst the horses examined but we were unable to reach only one "suspected" place beside Mr. Proulx's and were unsuccessful in finding the horses for examination.

In the town of Argyle I met one case, a colt, that showed very suspicious symptoms and recommended isolation. The animal was also suffering from mange. From the information I gathered I conclude the disease is very prevalent between Argyle and Warren, but circumstances prohibited us reaching the places suspected. Mr. Hughes has undertaken to collect all the information he can get and make a list of any suspected cases in order that we may at a future date examine them in a few days and not have to spend perhaps a week or more as I should have had to do in running around the country collecting information and then visiting the farms and probably finding the animals away from home, and, it being seeding time, he or any other member of the board of health could not spare the time. The expense again would have been very great both to the State and the local boards.

In order to stamp out the disease the State must have laws passed similar to those in force in other countries where glanders exist. Otherwise, there will be incurred an enormous loss to the country through the spreading of the malady, and probably human life sacrificed, as nothing but destruction of all diseased and isolation of suspected ones for a definite period, until the cases are declared either uninfected or diseased, will eradicate it. Compensation, if any, should be left to the district board to award according as their judgment should see fit.

The carcasses should be either burned or buried in a deep pit and penalties attached to anyone exhuming the body.

I must close my report in order to reach you by this mail, but, should you see fit, I will prepare a general synopsis of the laws enforced in Canada and elsewhere in regard to contagious diseases, more especially glanders and farcy, and forward it to you.

I must impress strongly the fact that it is *impossible* to stamp out the disease with only the present laws in force in regard to it.

I have the honor to remain,
Yours truly,
RICHARD PRICE, V. S.

SECOND REPORT OF RICHARD PRICE, V S.

ST. PAUL, June 24, 1884.

Dr. Hewitt, Chairman State Board of Health.,

DEAR SIR: In my previous report I omitted to mention the symptoms of glanders shown by the horses at Warren, Marshall County. The principal ones were nasal discharges of a glutinous consistence, adherent round the external nares; general emaciation, due partly to the severe work of spring seeding, but principally to the disease. On closer examination, excoriations of the mucous membrane caused by coalescence of previously existing chancres, with here and there ulcers and cicatricial tissue. The general appearance of the schneiderian membrane partook of a somewhat leaden hue. The intermaxillary glands were indurated and fixed to the superadjacent connective tissue and the raun of the inferior maxillary bone by fibrous bands. The respiratory movements were somewhat accelerated and auscultation revealed occasional mucous rales.

In one case the disease was accompanied by sarcoptic mange, giving the animal a most pitiable appearance. The cases I met were all of the chronic form, but when contagion takes place it may develop the acute which is rapidly fatal, or again give rise to the chronic which sooner or later causes the animal's death. Furthermore, it may partake of the cutaneous form and cause farcy, which itself may be acute or chronic.

For the guidance of horse men generally I may state that any nasal discharge of a glutinous and persistent character must be looked upon with suspicion, more especially where it is accompanied by swelled glands beneath the jaw and abrasions of the lining membrane of the nostrils, and would advise isolation of such until a "qualified" veterinary surgeon has examined the case. I would not by any means trust to the decisions of charlatans and self-styled V. S's. or horse doctors, as they are entirely unable to distinguish the disease from others that simulate glanders, and the destruction of those suffering from such would be a great loss to the community. On the other hand, I have frequently seen these empirics fail to recognize glanders and treat for chronic nasal discharge, causing in the meantime other horses to take the malady.

In one instance a leading business gentleman of this city purchased a horse for $700; placed him in the stable with a mare that cost $500 and a team he paid a good deal more than $5,000 for. The first mentioned horse had a nasal discharge. A quack was called in and treated for chronic catarrh during a period lasting some six weeks or more. After a short period the mare, who stood next him, showed signs of illness. Her legs stocked, sores broke out along the course of the lymphatics; she was treated for "something" and finally turned out to pasture. The owner consulted me one day concerning the horses, and as I suspected glanders, I visited the stable. On examination I found the horse showing unmistakable signs of glanders and advised immediate destruction of him. The owner, however, was very reluctant and asked me to examine the mare before destroying the horse and more especially as he had made arrangements to put her to a $10,000 stallion. I found the mare with well developed farcy. Still the owner was not fully satisfied, so by my suggestion he had a qualified veterinary surgeon from our sister city examine the mare with instructions to destroy her if he decided it was farcy. I need scarcely add that he shot her and I destroyed the horse in a similar way. The barn was then disinfected, luckily before his valuable team were attacked with the fearful disease.

Now, had this mare been "sired," in all probability the horse would have acquired the malady, and, supposing the mare to have carried her colt full time and it to have lived, it would any time from the date of birth to within three or four years of age, have developed the malady. Supposing it to have remained latent for three (3) years, during this period it would have transmitted the contagion to those at pasture or in the barn with it and still not have evinced diagnostic signs, and so lived on unsuspected unless the history were known.

I give this account of one among many so as to bring before the public the risks they run in various ways both to their stock and themselves. All domestic animals are liable to the disease and probably a pet dog may acquire it and so carry the contagion to the children who play with it.

Yours truly,
RICHARD PRICE, V. S.

REPORT OF RICHARD PRICE, V. S.

167 West Fourth Street,
St. Paul, July 28, 1884.

DR. HEWITT:

Dear Doctor, I do not quite understand what report you require further than that I have already sent in regard to glanders in Marshall County.

1st. I sent a copy of my instructions to the local board.

2d. My report of the cases and the general symptoms.

Should there be any further information necessary, kindly specify it and I will endeavor to prepare it as required.

The enclosed report of the cases of anthrax will, I trust, be a guide to you in tracing the disease, and the cause of the present outbreak. In my mind I am fully satisfied the disease is anthrax. I regret that, my time being so fully occupied with my professional duties, I cannot write a fuller and more detailed history of the disease, etc., but any time I have spent in preparing my reports has been taken from my business hours, and, in consequence, has been so much lost time to me, and I believe no remuneration is allowed for such. I would like to call your attention to the fact that in other states the veterinarian appointed gets a regular salary and the usual fee of $10 per diem and expenses; the former amounts to $2,500 per annum. From this fact, you can perceive that it is a great loss to me to have to give many hours from my business ones in preparing reports; and that the fees are so small that they do not begin to recompense a *qualified* man for his time, etc.

Yours truly,
RICHARD PRICE.

GLANDERS IN MINNEAPOLIS.

June 5th, secretary wrote to Dr. T. F. Quinby, health officer Minneapolis:

"Glanders reported in your city; your attention is respectfully called to the fact that as it is a disease communicable to man, it comes under general law relating to infectious disease. This board requests that you enforce the same penalty against veterinary surgeons and owners of glandered horses, as against those in care of infectious disease among men; will co-operate with you. The law is amply sufficient. Please inform this board of the cases of glanders in your city and the measures you have adopted."

June 6th, Dr. Quinby replied:

"There are glanders at present in this city; am endeavoring to stamp it out; all affected horses I order shot; the stable quarantined strictly, and fumigated with chlorine or sulphurous acid gases. Rest assured that I shall do my best to discover every case of glanders, kill the horses and when necessary punish offenders."

July 29th, Dr. Thos. F. Quinby, health officer, Minneapolis, reports:

"I know of no case of glanders or farcy in the city at present; as soon as a case is discovered, it is slaughtered; all the patrolmen are on the lookout."

GLANDERS IN CANBY, YELLOW MEDICINE COUNTY.

Under date June 8th, Mair Pointon, secretary of Canby Farmers' Club, writes officially to the Governor:

"As to steps to be taken for examining diseased horses in that part of the State to discover whether they are glandered, matter is becoming serious, especially to owners and stock raisers."

Governor referred the letter to the secretary of this board, June 11th.

June 15th, secretary replied to Mr. Pointon:

"It is the duty of local board, on request of any citizen, to inquire into the existence of glanders among horses. Chapter 132, section 28 of Laws, 1883, enables them to hire a competent veterinary surgeon. State board have general charge of the matter; local boards act under instructions of this board, under section 3. Our advice is, notify local board, insist that it ascertain the exact facts and report the same to this board."

Under date July 18th, from Canby, Mr. Pointon replies:

"As soon as possible placed before the club your favor for their action; they appointed a committee of three, myself chairman, to enter complaints to local boards of several towns named in enclosed list—we have reason to believe that there are cases of glanders or farcy among the horses owned in said towns—asking them to take the matter in hand and thoroughly investigate; notifying them that you would co-operate."

July 31, secretary replied:

"The delay of printer prevented me from sending you the circular on glanders on receipt of your letter, but I sent the regulations some time ago; have sent the special letter to each of the local boards you specify, eight in number, officially calling attention to their duty, and if they neglect their duty enter complaint before a justice; keep me thoroughly and carefully informed; we should be glad if a diary of cases and results could be kept."

June 30, secretary sent following communication to the *Pioneer Press*:

"You will confer a favor upon owners of horses and mules, and to other people as well, by publication of enclosed article (in substance the circular of the board on glanders), which is appended. The disease exists in several places in the State, and is communicable to man and infectious to other animals, is a nuisance, which it is a duty of local boards of health to deal with and suppress; as usual in contagious disease much ignorance and indifference exists upon the subject among those most interested; local boards of health, under instructions of State board, are required to quarantine and control the cases brought to their knowledge; if the instructions of the enclosed article are followed, all suspicious cases quarantined till all doubt is removed, any widespread prevalence of this disease will be impossible."

GLANDERS IN MANITOBA.

Under date July 8, 1884, from Winnipeg, Manitoba, Deputy Minister Hon. Acton Burrows, of Agricultural Statistics and Health, writes:

"Have observed your letter, dated the first, published in St. Paul *Pioneer Press;* I shall be glad if you will forward me the more detailed instructions and information which you speak of as having been issued by the State board to local boards of health. I send you herewith a manual of the acts relating to this department; part seven deals with diseases of animals, part nine, with public health. I also send you a copy of the instructions to the veterinary sanitary service of this department; should be glad to keep up an exchange of publications, which may be of mutual interest; there is need of co-operation between the authorities of Minnesota and Manitoba at the international boundary, where glandered horses are continually being trafficked in. This department has a veterinary inspector at Emerson, one of the points at which the Canadian Pacific Railroad crosses the boundary. Could not your State government do something in the way of appointing an inspector at St. Vincent, so that if glandered horses are taken from this side of the line, to prevent their being shot, they may be sent out of harm's way when in Minnesota territory?"

July 17th, secretary of this board replied:

"I send copies of the forms and instructions ordered to be used by the local boards of health, as respects glanders; for details they are referred to standard works. "Fleming's Manual of Veterinary Hygiene and Police" is the best. I am instructed by the governor to co-operate with you in any way practicable; I send our last report."

GLANDERS IN ST. PAUL.

July 1, 1884, secretary of this board wrote to health officers of St. Paul: "Enclosed find official notice to your board as respects glanders."

July 1st, secretary wrote to local boards of health of St. Paul and Minneapolis:

"In accordance with chapter 132, laws of 1883, in view of the fact of official notice from your health officer of the existence of glanders in an epidemic form in your city, you are respectfully requested to have a careful and immediate survey made of horses and mules under his direction, and that a careful record of such survey be kept. Second, to instruct him, when suspicious cases are found, to quarantine them till all doubt is removed as to the character of their ailment, serving on the person responsible for such animal notice to quarantine on the form number one, herewith submitted.

Third, if there is no question as to the existence of glanders, serve notice in accordance with directions printed upon form two, herewith submitted.

Fourth, to make the survey by wards and report as each ward is completed, to you. Send a copy of report to this office. Instruct him to quarantine all *suspected* animals till all doubt as to the character of the disease is removed. This way will avoid unpleasant disputes, legal or otherwise. It would be well to have such post mortem examinations of the bodies of animals killed by your order as to make the evidence of glanders doubly sure. You will understand the importance of prompt and vigorous action in the matter and the only efficient way is by a careful and thorough survey of every animal and mule in the city. This board will give any assistance in its power. Please inform this board of your action in the matter."

Under date July 8th, Dr. Hoyt, health officer of St. Paul, submitted the following report:

"On receipt of your communication I at once ordered a thorough examination of the animals at all livery, sale, car or other public stables in the city. Any animal having a discharge from its nose, or any suspicious symptom, was ordered to be reported at once, with the following result:

Number stables inspected	21
Number horses inspected	1,106
Number mules inspected	167
Total	1,294

No evidence of glanders or farcy discovered in a single instance; sanitary inspectors instructed to be constantly on the alert for anything of the kind; if a case should occur in the city we shall know of it very quickly and will deal with it according to instructions."

July 9th, secretary acknowledged receipt and notified Dr. Hoyt of the disease as existing in certain private stables in St. Paul, as reported by a veterinary surgeon.

Under date July 9th, Dr. Hoyt reports:

"A suspected case of glanders; I examined it this morning with Richard Price, V. S., who pronounced it glanders; horse was bought by a poor man from a horse dealer; was sick at the time and has been ever since; dealer's name or whereabouts not known; have quarantined the horse, and await instructions."

July 9th, secretary replied:

"Acknowledged receipt of above letter and sent copies of forms 1 and 2, with instructions printed on the back, which only need the signature of your board to be law. As to the case in hand, quarantine till beyond all doubt; tell the owner to get other advice if he wishes it; have Dr. Price fill certificate No. 3; after the shooting have post mortem examination made by Dr. Price or other competent veterinary surgeon. Your only duty is to quarantine until all reasonable doubt is removed, and then to order the death of the animal."

Under date, July 16th, Dr. Hoyt writes:

"As to case of glanders that I reported last week, when discovered I called a meeting of the board. Couldn't get a quorum. Acting under advice of city attorney, made arrangement with Dr. Price to examine the suspected cases, fees to be $2.00 when not glanders and $5.00 when they were. Dr. Jones, another veterinary surgeon who had been attending the horse, then came to the front with positive assertion that the horse didn't have glanders, and if I caused it to be killed the city would have a suit for damages at once. Then ordered the animal quarantined. Called another meeting of board of health, this time with success. Presented the matter. They referred it to the council, who last night refused to take any action at all and made light of the affair, and, as a result of the order, I am responsible to Dr. Price for $7.00 and expenses of quarantine, and still have the horse on my hands. Would like to hear from you at once, with positive orders, one way or the other, and your authority for the same to dispose of the animal. Am disgusted with glanders. Has given me a good deal of annoyance and extra work and no return except, perhaps, ridicule."

July 17th, secretary replied: "The law is imperative as respects the control of glanders; neither you nor I are responsible for the law but only for its execution; you are greatly mistaken if you think you make yourself ridiculous by enforcing the law or by calling upon your board and the council to do so; as to the annoyance or extra trouble, your attempt to do your duty has caused that to be expected and no cause for complaint; look at the law and put yourself squarely on record for its inforcement. Please see Drs. Hand and Price together; have written to Hand. We must find a way to compel the local board and the city council to act in the matter."

Same date secretary wrote Dr. Hand, and enclosed the above letter to Dr. Hoyt, to Dr. Hand, requesting him to assist Dr. Hoyt in persuading the council, or at least the mayor, to do their duty:

"The governor instructs me to compel obedience to the law, and that local boards must attend to this duty. Dr. Hoyt seems not to understand that quarantine is not paid for by the city; it is a duty that a citizen owes to other citizens when his person or property are likely to cause disease; the "horse doctor" controversy is the worst feature of the business; please return Dr. Hoyt's letter."

Under date July 17th, Dr. Hand replied:

"I have been to see the horse doctors with Dr. Hoyt. Dr. Price told me he had seen four cases of true glanders this week, two of them from Minneapolis. The other horse doctor, Dr. Jones, says he has not seen any glanders; I am at loss how to settle the matter as yet. Dr. Price has reported his cases to the health officer, but the latter says he can do nothing, for the board and city council refuse to sustain him; will see mayor; the popular argument is that sporadic cases of glanders are with us all the time and that there is no use in making a fuss about it unless it becomes epidemic; we hope by proper evidence to maintain our ends."

GLANDERS IN WARREN, MARSHALL COUNTY.

July 14th, John McCullum, of Warren, Marshall County, wrote the secretary, describing the symptoms of a pair of mares as follows:

"Lumps under the jaws, one has two and appear to be sore; animal flinches when touched; the other has three and lumps not sore; both have discharges at the nose; matter differs in color, white one day and again an ugly yellow; no offensive smell from the matter; running at the nose for six months; had them only two weeks when this symptom began. Do you think it possible that the party from whom I got them could have stopped the discharge for that length of time? No indications of disease on body, no lumps, except those described; good life, and appetite always good. A neighbor has a horse which worked with my mares two or three days this spring; it has a large lump on jaw, sore and healed; broke and discharged three weeks ago and re-swelling, and looks like its going to break again; runs at nostril on same side as lump; leg on same side swollen; broke and running matter; had him bled; blood thin and corrupt; much better since; two small lumps on belley."

July 17th, secretary replied:

"Because glanders have been in your county, there is reason to suspect your mares. Isolate them from all well horses; work them as usual, giving them good care and avoid overheating; wetting their hay and feed, give them sulphur now and then; keep their noses clean and sores dressed until well or till there can be no doubt. Notify local board and watch other horses as well."

GLANDERS IN LAVONIA, SHERBURNE COUNTY.

Under date July 15, 1884, A. C. McCullum, town clerk of Lavonia, by order of local board of health, writes:

"I write to ask you to send copies of the regulations for the suppression of glanders, etc.; part of this town has been put under quarantine regulations on account of "nasal gleet," though some who have complained have insisted that it is glanders in the first stage, and the board would like to have your instructions and advice as to how to act promptly. Is the "nasal gleet" contagious or not, and will it end in glanders as some insist it will? We have acted for the best; some insist the board is liable personally for what has been done. A reply to queries and other suggestions which you deem proper will be gladly received."

July 28th, secretary answered:

"Your letter should have been answered sooner, except for the delay of the printer in furnishing our circular letter and instructions, and forms Nos. 1, 2 and 3, approved by the Attorney General. Nasal gleet is only too often a blind for glanders. Quarantine all such cases until sure, and when sure of glanders, kill the animal according to law (chap. 132 Laws 1883) for infectious diseases. Will send circular letter in a few days."

GLANDERS IN WORTHINGTON AND ARGYLE, MARSHALL COTNTY.

July 28, 1884, Wm. L. Sargent writes from Crookston, that he has examined a horse in town of Argyle and one in Worthington, Marshall County, and three in Farley, Polk County, and find them suffering from glanders, and has notified the local boards of heolth of the same.

Secretary replied acknowleding and thanking him for the notice, and notified the local boards as requested.

NOTICE TO DESTROY ANIMALS HAVING FARCY OR GLANDERS.

....188...

To...

You are hereby notified that there is now on your premises the animal... specified below, suffering from glanders or farcy, which disease is communicable to man, and is therefore a nuisance and cause of sickness. You are therefore hereby ordered, within twenty-four hours of the service of this notice, to dispose of said animal..., in accordance with the regulations of this board relating thereto (hereto attached), and to disinfect the place and things occupied and used by said animal..., before permitting their occupancy or use by other animals. Said disinfection to be in accordance with the regulations of this board (hereto attached).

The animal... referred to...

....

....

....

....

By order of the local board of health of.................................

....Health Officer.

REGULATIONS IN CASE OF ANIMALS AFFECTED WITH GLANDERS OR FARCY.

To accompany Form No. 2, State Board of Health, Infectious Diseases of Animals.

Approved by the State Board of Health;

Issued by Local Board of Health of...

Glanders and Farcy are diffused, 1st, by actual contact of the diseased with healthy animals. 2d, through the agency of things carrying the poison.

The disease is most likely to appear in large establishments or stables, and the poison seems to cling very tenaciously to places and things where it has once obtained a lodgment. Apparently healthy horses may carry the disease, so in time of the known existence of the disease too much care cannot be exercised by horse owners.

Once well established, the disease, in any form, is incurable, and the animal, no matter what the apparent improvement, can infect other horses and men probably as long as it lives.

In all cases when the disease is unquestionably present, the fact will be established by competent evidence, satisfactory alike to the owner, keeper and health officer; and this done, the horse must be IMMEDIATELY SHOT, and the carcass, after slashing the hide, is to be BURIED AT LEAST SIX FEET DEEP, COVERED WITH QUICKLIME AND WELL PACKED EARTH. No sale to rendering establishments shall be permitted, as handling such carcasses is a cause of Glanders to the workmen, and of danger to other stock.

The infected animal disposed of, the next step is the disinfection of the stable and the articles used by it.

Remove and burn all litter, hay and articles not to be retained. This done, close the stable as tightly as possible, nailing up all holes, etc. Set in each stall a washtub quarter full of boiling water. On a stone or brick in this water set an iron skillet or old pan containing live coals. On them put a pound of roll sulphur, broken into small lumps. Go out and shut the door. After six hours open up and ventilate as thoroughly as possible for twenty-four hours, and then scrub all the woodwork with hot and strong soapsuds. Everything which it is thought best to preserve should be hung up in the stalls before and during the sulphur fumigation, and after exposure to air and sun, be washed with soapsuds. After washing the stable and drying by free ventilation, whitewash with fresh and caustic whitewash, and scatter quicklime on the floors and in the feed boxes. At least a week of free ventilation after the above things are done should be required before occupancy by other animals.

Temporary structures, straw barns and the like are better burned, and the same is true of ordinary horse furniture, halters, blankets, &c. Both the slaughter of the infected animals, their burial and the disinfection of places and things to be under the direction of the health officer.

By order of the Local Board of Health of..............................

....Health Officer.

Dated.......................................188...

CERTIFICATE OF SURGEON IN CASE OF GLANDERS OR FARCY.

....188....

To the Local Board of Health of..

I hereby certify that I am familiar with the symptoms and history of glanders or farcy, and that I have examined............ .... belonging to or on the premises of.. and it is my professional opinion that the animal..... above referred to .... suffering from glanders or farcy, and that......... connot recover, and .... liable to give the disease to other animals, and to man.

Signed..M. D., or V. S.

NOTICE TO QUARANTINE ANIMALS SUSPECTED TO HAVE FARCY OR GLANDERS.

....188..

To...

You are hereby notified that the local board of health have reason to believe that there is now upon your premises, the animal.. specified below, suffering from the disease known as glanders or farcy, a disease communicable to man, and therefore both a nuisance and cause of sickness. You are therefore ordered to quarantine said animal.. in accordance with the regulations of the board (hereto attached), until such time as this board shall declare said animal.. to be free from said disease.

The animal.. referred to... ....

By order of the local board of health of the................................. of..................................

.....................................Health Officer.

QUARANTINE REGULATIONS FOR ANIMALS SUSPECTED TO HAVE GLANDERS OR FARCY.

Issued by the local board of health of..............................

Approved by the State Board of Health of Minnesota.

To accompany service of notice to quarantine (Form No. 1, Infectious Diseases of Animals).

(General Laws, 1868, chapter 59, section 1, as amended by General Laws, 1879, chapter 46).

SEC. 13. Any person being the owner of any horse or other animal, or having the same in his care or under his control, having the disease known as the "glanders," who shall knowingly permit such animal to run at large or be driven upon any of the highways of this State, or shall sell or in any manner dispose of the same to any other person; or any hotel keeper or keeper of any public barn who shall knowingly permit any horse or other animal having such disease to be stabled in such public barn, shall be guilty of a misdemeanor, and upon conviction before any Justice of the Peace of any such offense shall be punished by a fine of not more than one hundred dollars ($100), or less than twenty-five dollars ($25), or be imprisoned in the county jail not more than ninety (90) days, or less than ten (10) days.

The board of health will strictly enforce the above law as also the provisions of section 30, chapter 132, Laws 1884, providing penalties for violation of the regulations of boards of health.

All persons owning or having care or responsibility for animals suspected of having glanders, or known to have the disease, will observe the following regulations:

I. To report to the health officer either in person or by postal card, the existence of such cases, giving name and residence of the owner or keeper, and the number, kind, and locality of the animal.

II. Until visited by the health officer or his appointed agent, separate the animal from all association with other animals, using separate utensils (pails, etc.), and if possible, keeping in separate enclosures or buildings.

III. After examination and receipt of notice to quarantine, follow strictly the instructions served, and maintain entire isolation of the suspected animal or animals, until the quarantine is raised by the local board of health or health officer.

IV. No suspected horse or mule to be with or near healthy animals during quarantine.

V. No horse or mule to be sold during quarantine without the permission of the health officer and notice to buyer by seller of the facts in the case, and the surrender to buyer of this notice.

VI. The health officer or competent person appointed by him will visit animals in quarantine at least once a week until it is raised.

Owners or keepers of horses will confer a favor and add to the safety of their own stock by notifying the health officer as above of any suspected animals in their neighborhood, giving full details as to name and location, and giving also their own name and address.

After the raising of quarantine it is always a matter of safety to wash thoroughly, with hot soap suds, all utensils and boxes and walls of stalls occupied by the suspected animals. Burn old straw and hay and then ventilate thoroughly for a week before using for healthy animals.

By order of the local board of health of.................................

....Health Officer.

Dated at...188..

DISEASES OF CATTLE

FOR THE PERIOD BETWEEN

JANUARY 1, 1883, AND JULY 31, 1884.

DISEASES OF CATTLE IN BUTTERFIELD, WATONWAN COUNTY.

Under date of March 12, 1884, Mr. J. D. McBroom, of Butterfield, Watonwan County, Minnesota, reports to the governor: "In a small herd in my stable on the Butterfield farm, a portion of the cattle appear affected in a manner that calls for investigation. A three-year-old heifer, which came in nicely a week ago, is coughing badly. Have said nothing to my neighbors on account of their dread of pleuro-pneumonia. Please communicate to the proper officer who can advise me what to do, if he do not visit me."

March 14th, governor enclosed the above to secretary, requesting him to go or write immediately to Mr. McBroom, and advise him in the matter.

March 15th, secretary wrote Mr. McBroom: "I send you a report of commissioner of agriculture, and marked the places which give the information you require. With treatment for cure this board have nothing to do, but only with cattle having diseases dangerous to man. You will find directions for the care of suspected cases, which you will do well to follow until sure your cattle do not have pleuro-pneumonia. See also description of rinderpest. Take a special care of the suspected stable and its contents. Better treat it as a hospital till sure."

Under date March 20, 1884, Mr. McBroom writes:

"Special report received; affords very valuable aid; find no similarity of symptoms; have isolated the affected one and am watching development; thanks for kindness and promptness."

March 15, secretary wrote to secretary of Iowa Board of Health, asking if pleuro-pneumonia existed among cattle of Iowa, and the steps taken to check it.

March 17, secretary of Iowa board replied:

"No, nor never has."

Same date (March 15), secretary of this board wrote to secretary of Illinois Board of Health for information, who sent copies of laws, etc., and stated:

"State veterinarian not of our board; duties defined in the acts sent; he, or deputy, inspect cattle at Union Stock Yards, Chicago, when suspected; when necessary, agencies and authorities of this board either aid him or take entire control and employ him and his agents. Illustrations are given in the letter to French consul at Chicago. No contagious foot or mouth disease in Illinois; the cases which occasioned the recent reports and excitement seem a form of "paronychia interdigitalis," similar in some respects to foot rot in sheep, but lacking contagious character thus far."

March 15, secretary of this board wrote commissioner of agriculture requesting their latest publications respecting pleuropneumonia and other diseases of cattle.

March 13, secretary wrote Dr. Hand, of St. Paul, in consultation for a competent veterinary surgeon.

March 16, 1884, secretary wrote governor:

"I find there will be a gathering of men—State Board and others—in the latter part of this week in a sanitary council of Mississippi at Memphis, Tenn., one of whom will probably be the government veterinary surgeon, now in Kansas. Can get the facts in regard to cattle troubles better there than elsewhere in a short time. Can stop in Chicago going or coming. If you approve send an order to investigate and report on the danger to the State of any or all these diseases. Include in the instruction permission to visit Chicago for the purposes of investigation."

March 18, 1884, governor issued following order to the secretary.

"In view of existence of an epidemic disease among the cattle in some of the States and Territories of the West, and the consequent danger of contagion to the cattle of our own State, I desire that you take steps at once to investigate the character of the diseases referred to and the possible danger of their spread to the herds of Minnesota. If you deem it necessary you are authorized to visit other States in the prosecution of your investigation, and also to appoint a competent veterinary surgeon to aid you in your labors. Please report to me at as early a date as possible such information and suggestions as you deem important in the matter."

Before going as above directed, the secretary wrote the Governor:

"I respectfully advise that if you issue a proclamation, it be to notify owners of stock that this board, under your care, will have charge of preventive measures, and to request and urge upon them that if any suspicious diseases occur in their herds, they quarantine them carefully until they have notified me and the real cause of the trouble may be ascertained. I will prepare a brief description of each disease now existing in herds west and south of us, likely to be spread by travel or intercourse, and if you deem it advisable it can be printed for widespread distribution through the State; we will secure the services of a competent veterinary surgeon. If, in addition, the railroads will tell us—

First—Where on their lines pleuro-pneumonia or foot and mouth disease exist, and the regulations of the acceptance as freight of stock from such herds?

Second—Where cattle in infected localities away from the railroads come from; the distance traveled before reaching the railroad and the rules for their inspection before laid on the cars?

Third—The inspection en route, especially in Minnesota?

Fourth—Where are the feeding or other places in the State, where cattle going through the State might come in contact with domestic cattle?

Fifth—Are cattle going through unloaded in this State? where; and the regulations enforced?

6th. What is done with cattle dying en route. [*Full details* here.]

7th. Will the railroads keep us informed of suspected cattle going through, and co-operate in measures of precaution?

8th. What steps are taken to keep "through cattle cars" clean, and are they cleaned and disinfected anywhere in our State?

9th. Are such cars ever used to transport our domestic cattle? If so, here is a *very real* danger, as you can readily see, and it should be looked into carefully.

10th. Is there any importation of western cattle into the State for slaughter or other use? If so, whence and where? You will know best how to find out about this. It is of course important.

11th. Do any cattle come into the State on foot who might bring the disease?

We must look the ground over carefully *in advance* of possible invasion. This can be done *leisurely* and *carefully* now; but information from the railroads and from leading stock dealers in the State can be gotten immediately."

Secretary left for Memphis on evening of 17th, for the purpose of ascertaining the truth as to reports of contagious disease among cattle in any of the States or Territories to the south or west of Minnesota.

On his return, he reported to the governor: "The fact is that neither in Kansas, Missouri, Iowa or Illinois, or in any Territory, has there been a case of foot and mouth disease this winter. This is the concurrent testimony of all competent to judge in the matter. The disease actually present in the suspected herds is one of the hoof exclusively, not contagious or difficult of treatment if taken in time.

It is due chiefly to the insanitary condition of the animals, due to the carelessness or neglect of their owners. Another disease, reported in one or two places, is called, vulgarly, "Big Head;" its pathology I did not learn, but it is not contagious, and is due to local causes. I have the promise of all the official formal reports as soon as rendered, and have an agreement between executive officers of boards of the states of Illinois, Iowa, Missouri and our own, whereby we are to be kept mutually informed of the existence of infectious diseases, or suspected diseases, in cattle, and a plan for concerted action, if need be, can now be easily arranged. Great injury to the trade in cattle, and mutual distrust between farmers, dealers, veterinary surgeons, health officers, etc., has resulted from the inexcusably tedious interval permitted to elapse between the first unfavorable symptoms and the careful investigations which have resulted in the denial of the infectious character of the existing disease; the present fear is hasty and injudicious legislation in states whose legislatures are now in session, and that it may be made in the interests of one class, the great cattle raisers in Kansas. I think we cannot escape a careful preparation for possible danger. I respectfully refer to my former letter for the account of what seems to me to be the first step to be taken, frank, full and clear statement of what we want, and a request, for their co-operation, to railroads; I met Mr. Dodge, of St. Paul & Duluth, Sunday, and he said that was just what the railroads would prefer, and that he had no doubt of their hearty co-operation. If you will have the inquiries made, which I suggested in my last letter, the answers from the railroads will give us a solid basis for a plan to be proposed to them for co-operation. The example of Kansas, with the result of a panic among the ranchmen, dealers and market men, an expensive extra session of the legislature, etc., makes it all the more imperative that we be forehanded and thoroughly prepared: 1. To prevent cattle plagues; 2. If any come, to deal promptly with them. To do either successfully we must be ready."

C. N. H.

CATTLE DISEASE IN SHERBURNE, MARTIN CO.

Under date July 5th, Dr. Hand, president state board, informs secretary that on that date (July 5th), Mr. Erick Olson, of Sherburne, Martin County, Minnesota, had applied to the governor for assistance in the matter of a disease among the cattle of his locality. Governor referred Mr. Olsen to secretary with a letter asking that our board take such steps as might be required. The following is the statement made by Mr. Olsen.

"Out of a herd of one hundred cattle, steers, cows and calves, feeding on a rolling prairie, ten have died since Tuesday (July 1st), and a calf found dead on the prairie ten days ago is supposed to have died of the same disease. Cattle have all appeared in good health until within two to four hours before death."

Dr. Hand continues:

"This sickness has caused much excitement and I thought it best to send Richard Price, V. S., of this city, back with Mr. Olsen at once to ascertain the cause of this strange mortality and advise him what to do. He left on 3:50 P. M. train and will report immediately on his return."

July 9th, Dr. Price reported to secretary:

"The disease existing on Range 32 and 33, Township 101, Martin County, is evidently anthrax. Up to date have had no opportunity to make a microscopic examination of blood, water, etc. I will send you some of each for your personal examination. Carcasses were putrid and I fear the rods of bacilli will be absent, but suppose the spores will be present and on cultivation will produce the former. I destroyed the carcasses of those dead from the disease by burning and the graves were sprinkled with lime after the bodies were exhumed for cremation.

ADVICE TO LOCAL BOARD.

FAIRMONT, MINNESOTA, July 7, 1884.

1. Isolate all sick and suspected during period, and seven days after, symptoms are shown. During sickness antiseptic remedies must be administered.
2. Burn thoroughly the carcases of any that die from disease.
3. Sprinkle lime all over the ground where the animal has been while sick.

4. Destroy by fire all manure, etc., from sick animals.

5. Do not allow cattle to be grazed upon the low-lying land near the slough on sec. 13, range 33, town 101.

R. PRICE, V. S.

Under date of July 7th, Mr. Olsen wrote to the Governor:

"Dr. Hand sent R. Price, veterinary surgeon, with me to investigate the cause of death of stock in Martin County. As the carcasses are putrid it may take him some time to make his official report. I will state that we found the cause of the eight cattle which died July 3d and 4th, to have been a calf which died on the 22d of June, the matter from which washed into the lake from which the cattle were drinking which died. There will be some expense to investigate fully. Please inform me whether the State will give the veterinary surgeon all the facilities needed, and how far the county and town board are justified in paying for expenses to prevent spread of disease."

July 12th, Dr. Hand replied:

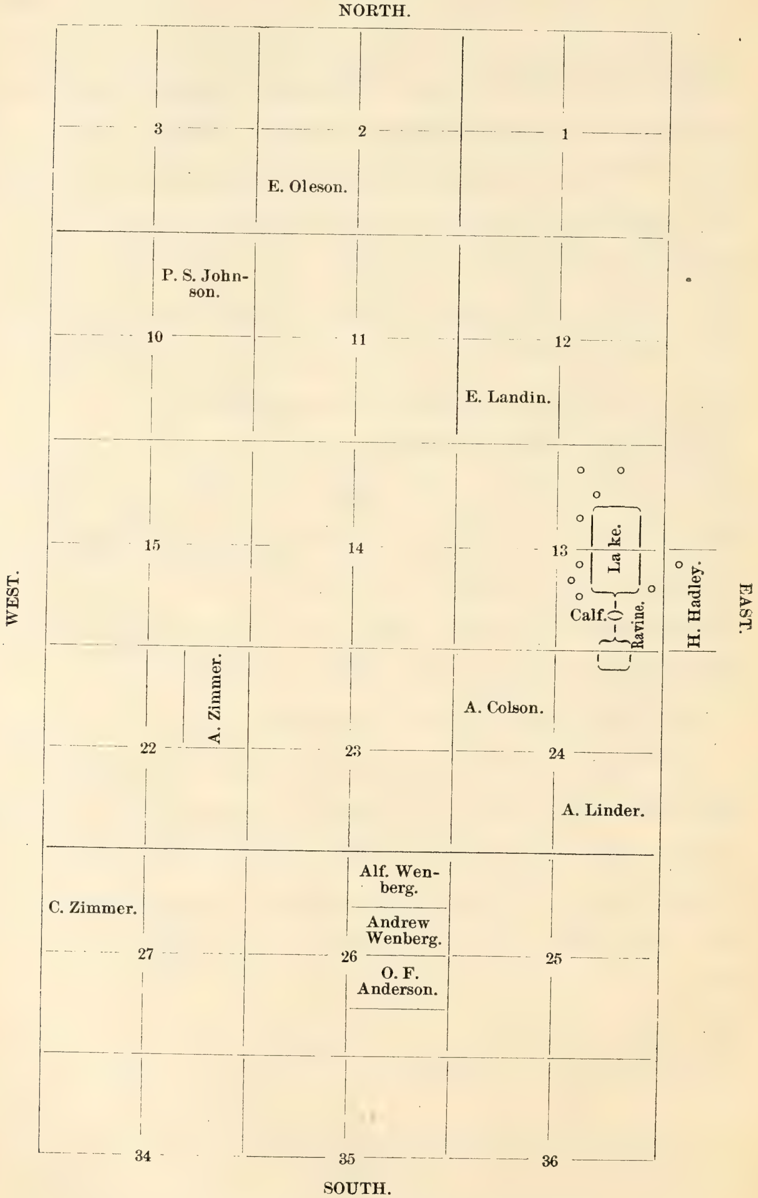
"Just returned home and found your letters. I stopped at Sherburne, Martin County, to inquire about that cow business; found that there had been no new cases since the day that Mr. Olsen came up to see the Governor. The citizens seemed much pleased that the "horse doctor" came down so quick, and seemed satisfied with his explanation. I am not, however, and intend to look farther into the matter. I directed Dr. Price to send you a sample of the blood, etc.; has he done so?"

July 15th, secretary wrote Erick Olsen:

"Governor Hubbard has this afternoon handed me your letter to him, of July 7th. Dr. Hand wrote me also Sunday, July 13th, that he had been at the infected farm since the veterinary surgeon was there and that no new outbreak has occurred. It is not at all certain what the disease was. Town boards are bound to pay the expenses of preventing local outbreaks of disease. See chap. 132, sec. 28 and 29, Laws 1883, which I send you."

REPORT BY DR. RICHARD PRICE ON CATTLE DISEASE IN MARTIN COUNTY.

DIAGRAM SHOWING RESIDENCE OF PARTIES LOSING CATTLE.



NOTE.—The mark ○ indicates spots where cattle died on July 3d and 4th.

Alfred Wenberg bought six calves from Mr. Wheeler of section 6, town 102, range 33, in 1876. In the March of the following year (and April) he lost four, then one-year-old, on section 26, town 101, range 33. They were left there to rot and not buried.

In the springs of the years 1878, 1879, 1880, 1881 and 1882, Alf. Wenberg lost one or two yearlings each year. The carcasses were either buried or hogs ate them. He, however, never lost a hog or saw one sick.

In the March of 1884 he lost a poor yearling. The hogs ate his carcass but none took sick. The above cases were supposed to be "blackleg."

The symptoms described were lameness, emphysematous swellings on the affected limb, under the skin, imparting a crackling sensation to the fingers when rubbed over the hide; paralysis, and death.

In 1876, Andrew Wenberg lost one two-year-old heifer. She was affected principally in the neck.

In 1878 Hank Hadley lost one two year-old-steer. He was buried on section 18, town 101, range 32, where no stock have since been pastured.

In 1881 P. G. Johnson lost three (3) yearlings and buried them on section 10, on high ground.

In September, 1883, August Zimmer lost one yearling and one calf. They were dragged on to the prairie on section 22, and there eaten by hogs and dogs, bnt none were known to die therefrom.

In 1881 he lost one two-year-old in February. He dragged the carcass out and it was eaten in a similar manner to the others.

In the summer of 1882 he lost twenty or thirty hogs. They began to scour and died inside of an hour. They were fed corn and swill.

John Mathew lost hogs and cattle in 1882 and 1884. These were buried where they died.

In February, 1884, O. F. Anderson lost one.

In 1882 A. Linder lost four yearlings and has lost more or less ever since 1875.

In October, 1876, Carl Zimmer lost eight head, one five and one three-year-old cows, three yearlings and two calves. The lake was frozen over and they may not have had sufficient water.

RECENT OUTBREAK.

A calf died first in a ravine among the long grass, where the water after a shower would flow into the lake (or slough). She lay only ten rods from it and the cattle would drink at the point of the lake where the ravine empties into it. The calf was eaten up and decomposed so that only the skin and a few bones and some manure were left on July 7, 1884.

She was supposed to die June 22, 1884.

A two-year-old heifer was taken sick on June 26th. The symptoms noticed were simply a sudden attack of stiffness in the legs, weakness, paralysis; skin imparting a crackling sensation under the fingers. They gave saltpetre, sulphur and gunpowder. She remained down for three days, then got up and commenced feeding. On July 7th she was still stiff and dull, though feeding. Blood apparently healthy, coagulating very readily.

Was very hot, wet and sultry on and for some days previous to July 3, 1884: On this day three died, two of Hadley's and one of Stone's; were dead four hours after first being noticed sick. Five died on July 4th. Four were dead by noon. At 6:30 A. M they were watered at slough at the point where the ravine empties into it. At 8 A. M. one, a five-year-old cow, died. At 12 noon a three-year-old steer died; was noticed stiff, uneasy, getting up and down, looking round at his sides, and in great pain. It finally stretched out and died. Muscular tremors were also noticed previous to death. They opened the animal, Mr. Eric Oleson performing the *post mortem* principally, but nothing beyond a congested appearance of the spleen and emphysema beneath the skin, was noticed. The blood, however, was dark and fluid.

Synopsis of cases that died July 4th:

One cow five years old.

One cow three years old.

One yearling.

One cow five years old.

One steer three years old.

The last but one, the five-year-old cow, died at 8:30 A. M., but did not water at slough, and was apparently in good health at 7 A. M., and pucking the other cows. She took sick at 8 A. M. and died inside of an hour.

A five-year-old ox was taken stiff in fore legs at noon, but at 6 P. M. was eating. Was still stiff on July 7th.

One six-year-old cow was taken stiff at 8 P. M. In milking her they noticed the secretion yellowish. They cut her tail and let her bleed freely. She recovered.

One two-year-old heifer was slightly affected; was not so fat as the others. She was first noticed stiff at 10 A. M. On July 7th she was feeding but still stiff.

With one exception all the cattle that died or were affected drank at the very point of the lake where the ravine empties into it. In this ravine the calf died June 22d.

The cow that did not drink there may, however, have eaten in the ravine and there picked up the poisonous matter. It is also to be noticed that heavy rains occurred after June 22d, which was no doubt sufficient to wash the decomposed material from the calf into the slough, and the weather being particularly favorable to the development of bacilli was no doubt the cause of the outbreaks on July 3d and 4th.

All these cattle are herded by one boy, who has nothing else to do.

I have made a hurried examination of the blood and am convinced that the disease is anthrax as I noticed numerous bacilli and spores which correspond to those I have previously seen in anthrax blood.

The remedies I suggested were preventative. Not to herd near the slough nor on land where the cattle were buried, and more especially not to water at the slough which is on section thirteen.

Pasteur has discovered bacilli anthracis in worms taken from mould over graves of cattle buried twelve years previously—also in the mould.

All the carcasses of those that died on July 3d and 4th were exhumed and burned, and the graves sprinkled with lime. Isolation of the sick was recommended.

Since my visit I have not heard of any fresh outbreak and trust there will be none. Should they follow out my instructions I have little fear of such.

Yours truly,
RICHARD PRICE, V. S.

NOTE BY SECRETARY.—The following extract denies Pasteur's statement.—H.

"Pasteur's statement that in animals dead of anthrax and buried, the bacilli form spores, that these spores are taken up by earth worms and carried to the surface of the soil, where they are deposited by their castings, and thus are capable of infecting animals grazing or sojourning on this soil, is not sustained by my observation. And further, Koch has proved,* by direct experiment, that spores of anthrax bacilli, when mixed with earth in which worms are present, are not taken up by these creatures." —E. Klein, Micro-organisms in Disease, p. 114; and in appendix to Medical Officer's Report Local Government Board, L. B.

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* Mitheil. a. d. k. gesundheitsamte, 1881.

July 30, 1884, secretary wrote to Dr. Hand, president of State Board of Health:

"Studying the above report and letter, I was unable to see any order in the evidence and had one of my students spend a few hours getting it into shape in the form of a table, which I attach. A review of the table shows no demonstrated, or even probable, connection between the purchase or death of the cattle and any specific disease common to all of them, *e. g.*

"No. IV. of the Table—Alf. Wenberg. No evidence that cattle bought in 1876 were sick. No evidence, if they were, that the period of incubation was so many months. (Fleming says the longest period known is twelve days). His cattle all died in the spring, and so far as the symptoms are described, correspond with the disease very common when ill-fed and badly-cared for cattle get first to abundant and rich grass.

"No. III. of Table—A. Linden—the next greatest sufferer. No data at all; 'more or less,' 'one or more.' No cause specified and no symptoms.

"No. VII. of Table—August Zimmer. No details, except the important one that hogs and dogs gorging on the carcass were not affected, for if the disease was *anthrax*, they would have been. (Fleming gives abundant evidence of this.)

"John Mathew, No. IX., only counter indicates anthrax so far as the vague statement goes.

"Taken altogether the evidence is nothing up to 1884, and then, if it indicates anthrax *at all*, it is what Fleming calls *sporadic*, and declares to be local and little likely to spread.

"But compared with American experience in the West and Southwest, it appears to have been a sporadic disease, due rather to insufficient winter care and too sudden change to grass.

"The July outbreak of sickness is still less clearly defined. No history or ownership is assigned to the calf, the most essential 'fact' in the statement. The poison of anthrax is a fixed contagion like that of small pox. It is communicable by the digestive organs. It is spontaneous in the cattle and pig. (Fleming.) 'Recent experiments seem to show that it is not diffusable in *water*.' (Fleming.)

"There are none of the usual facts of anthrax, epidemic or sporadic, in the history given. Nor is the fact which you and Dr. Price observed, that no new cases happened, favorable to the theory of anthrax, because the exposure in June and July, 1884, must have been very considerable before the doctor saw the cattle. The period of incubation or anthrax is very short and consecutive outbreaks increase in severity in the epidemic form. (Fleming.)

NOTE BY SECRETARY.—If the calf had anthrax and gave it to other cattle, was it not, as described in following extract from Klein, even more than by drinking the water, and why did not the entire herd suffer?

"If cattle die of anthrax in a field, the effusions of such animals always contain numbers of the bacilli, and these will be able to grow indefinitely on the surface of the soil, there being always present a large amount of suitable nourishing material, like vegetable and animal decaying matter, and as free access of air is always insured, they will eventually form spores. Such soils, owing to the presence of these spores, will remain a permanent source of infection to the sheep and cattle sojourning on them. (Koch.)"—Klein.

The extracts given justify the doctor's precautions, and illustrate the difficulties to be met in controlling the disease.—H.

There could not have been much of the carcass to wash into the lake, if it was served as the others were, 'eaten by hogs and dogs.'

"After Dr. Hand's visit he reported no more sickness since Dr. Price's visit, and no more cases have been reported."

TABLE ABSTRACTED FROM DR. PRICE'S REPORT.

Name of Loser of Stock.	1876.	1877.	1878.	1879.
I.—Andrew Wenberg	1 2-yr.-old heifer, affected principally in neck; 2 miles from C. Zimmer.			
II.—Carl Zimmer	Oct., 8 hd. 1 5-yr, 1 3-yr, 3 yearlings and 2 calves. Lake frozen (?) — may not have had enough water. 2 miles from Andrew Wenberg.			
III.—A. Linder	More or less. 1½ m. from Andrew and Alf. Wenberg; 2 m. from C. Zimmer.	More or less. 1½ miles from Alf. Wenberg.	One or more. 1½ miles from Alf. Wenberg, 1 mile from Hank Hadley.	More or less
IV.—Alfred Wenberg	Bought 6 calves of John Wheeler, who lived about 11 miles from Alf. Wenberg.	April and March 4 yearlings; rotted, not buried. ¼ m. from And. Wenberg, 1½ m. from A. Linder, 2 m. from C Zimmer.	Spring, one or more yearlings. Either buried or eaten by hogs. None of them sick. 3 miles from Hank Hadley.	Spring, 1 or 2 yearlings; either buried or eaten by hogs.
V.—Hank Hadley			1 2-year-old steer; was buried; no cattle since pastured where buried. Ab't 3 miles from Alf. Wenberg, 1 mile from A. Linder.	
VI.—P. G. Johnson				
VII.—August Zimmer				
VIII.—O. F. Anderson				
IX.—John Mathew				
X.—John Wheeler	Sold 6 calves to Alf. Wenberg. About 11 m. from A. Wenberg			

TABLE ABSTRACTED FROM DR. PRICE'S REPORT — *Continued.*

1880.	1881.	1882.	1883.	1884.
More or less.....	More or less. Three miles from P. G. Johnson, 1½ miles from A. Zimmer.	Four yearlings.....	More or less. One and a half miles from A. Zimmer.	More or less.
Spring, 1 or 2 yearlings, either buried or eaten by hogs.	Spring, 1 or 2 yearlings; either buried or eaten by hogs. 3 miles from P. G. Johnson, one mile from A. Zimmer.	Spring, one or two yearlings; either buried or eaten by hogs.	....	March, 1 poor yearling; eaten by hogs; none sick; supposed to be blackleg. Refer to Report, p. 313.
....	....	....	....	July 3, two cattle; died four hours after being noticed sick.
....	3 yearlings; buried on high ground. 3 miles from Alf Wenberg, 3 miles from A. Linder, 2 miles from P. G. Johnson.			
....	February, 1 2-year-old; eaten by hogs and dogs. 1 mile from Alf. Wenberg, 2 miles from P. G. Johnson, 1½ miles from A. Linder.	Summer, 20 or 30 hogs; scoured, and died within one hour; fed corn and swill.	September, 1 yearling and 1 calf; eaten by hogs and dogs. One and a half miles from A. Linder.	
....	....	Hogs and cattle; buried where they died. Residence not given.	....	Hogs and cattle; buried where they died. Residence not given.

CATTLE DISEASE IN WATERVILLE, LE SUEUR COUNTY.

Under date, July 7, 1882, governor inclosed the letters of L. Z. Rogers, of Waterville, respecting an outbreak of cattle disease there, requesting the board to take such action as was necessary in the matter. In two letters, dated July 5th, Mr. Rogers writes:

"We are having trouble among the cattle here requiring attention; seventeen cattle dead; all been drinking water out of lake which has a green scum; have always used the lake water for everything; there are a number of fishermen, fishing for pay in the upper lakes, who clean the fish, throwing the heads, offal, etc., into the lake, killing all they catch; some six horses, working on railroad, are sick, man in attendance believing they are sick from drinking the water; horse doctor treated six horses as poisoned, thinks they all will get well; physicians examined a dead cow to-day and found the stomach in which the water would rest poisoned, the coating slipping off easily; Mr. B. is losing hogs to-day. There is a green scum on the lake, floating with the wind; it has always been there in the summer, and never, in twenty-five seasons I knew it, has it caused any trouble; we don't know if dead fishes, low water (the upper lake being four or five feet lower than the upper, the dam being broken), or offal of any kind caused it; my own cattle, using well and creek water, are all right."

Before receipt of this letter, Mr. Rogers and Dr. E. P. Case had telegraphed the secretary.

July 10th, secretary telegraphed Prof. Edward D. Porter, professor of agriculture, University of Minnesota, requesting him to "visit Waterville and see Mr. Case, and telegraph secretary if need be."

Prof. Porter did so, and botanical investigation was made of the plant found in the water, under Prof. Porter's direction, of which an abstract will be found in appendix.

Under date June 13, 1884, L. B. Rogers, Waterville, telegraphed secretary:

"Eight cattle dead from drinking lake water; same as past two years."

June 14th, secretary telegraphed in reply:

"Keep cattle from drinking the water; send me a sample with plant; better consult veterinarian as to treatment."

June 13th, Mr. Rogers wrote:

"To-day eight steers were found dead on west shore of our lake; appear to have been dead two or three days; I write you and professor of agriculture of university; this is the third year of such accidents or affects; I report that you may know in time."

June 14th, secretary wrote:

"Telegram answered and letter at hand; by this time the owners of cattle ought to have learned that there is death to cattle in that water at this time of year; and not to have allowed the cattle to use the water."

June 16, 1884, Mr. Rogers writes:

"Your dispatch received; bulletin of Minnesota Academy of Natural Sciences contains a paper of J. C. Arthur on the nostoc family of plants; speedy death ensues, rendering a veterinary surgeon almost a superfluity; Prof. Hall, of State University, was here yesterday; we went all over the lakes, and found the plants mentioned only in the west end; the wind has blown for one week from the east; I found last night a crowded place, the plants very thick; I send a small bottle of them taken from a quart of water; we found the balance of the lake clear of them. Prof. Hall has gone home. What, in my mind, ought to be done is this: let some competent man come here and take animals; and let them drink and see what the result is, etc.; theories are good if correct, and experiments in which the State is interested should be made correctly and leave no chance for ambiguity. These plants may be as harmless as flour; when they die they settle to the bottom of the water."

Secretary replied, June 17th:

"You can easily test the poisonous qualities of this water by giving it to a selected animal; filter a quantity, or better, scoop up a quantity and mix with water you know to be good and give it to animal selected for the purpose. It should be mixed and drunk immediately after its removal from the water in which it exists. Have sent samples to Prof. Farlow, of Harvard University, who made the original investigation but did not discover them harmful to cattle. Perhaps Prof. Porter will assist you experimenting."

In sending a further bottle of the stuff, Mr. Rogers remarks:

"The strip of plants is ten feet wide and some sixty to eighty feet long, and has a scum over it, some of which is an indigo blue."

Secretary wrote (June 17th) to Prof. Farlow, Harvard University:

"Referring to your papers on algæ in drinking water in Massachusetts, State Board of Health Report, 1879, I venture to send you two samples of same variety of algæ which for three years have been suspected of causing the death of the cattle drinking the water. Will you kindly give your opinion as to the proper classification and any information (or inference) you may have as to their influence upon health."

July 2d, Prof. Farlow replied:

"I am very much obliged for the two samples of algæ which you sent; one was the 'Rivularia Fluitans,' referred to in the meeting of the American Association for the Advancement of Science, in Minneapolis, last summer; the other species was in very small quantity and somewhat broken up, but it seemed to me to be 'Clatrocystis Aeruginosa.'

Both forms are undoubtedly members of the 'Nostoc' family, and would be injurious when swallowed in large quantities, especially when partly decayed. Under such circumstances, however, man and most animals decline to drink the water. Fishes are, however, killed by these algæ, and if dead fish are present in considerable numbers they would render the water unfit for drinking. One would ask, how are the fish in the lakes infected by these algæ, and have you statistics of the cattle actually killed by drinking these waters? Some other members of the 'Nostoc' family have caused trouble this spring near Boston, and I shall soon print a note on the subject. The most recent paper on the subject is one of Wm. Philips on the 'Breaking of the Stropshire Meres.' It was published in a local paper in England, and you may have trouble in getting it, but if it is important to your purposes I can lend you my copy. In regard to 'R. Fluitans' I would say that Borvet, of Paris, has been investigating the development, and has come to some conclusions, which he has communicated in a letter, but has not yet published."

July 15th, secretary replied:

"I thank you heartily for your prompt and valuable reply to my inquiry as to 'Nostocs' and for your analysis of the specimens sent you by me. Shall be greatly pleased to see the paper you refer to; also your note as to troubles near Boston. We are chiefly interested to know if this vegetable poisons stock; how they do it. I do not see how cattle can be driven to drink it except by thirst, and as the like occurrence happened two years ago in this same locality, the farmers have little excuse."

CATTLE DISEASE IN PIPE STONE, PIPE STONE COUNTY.

Under date July 12, 1884, Wm. C. Barber, town clerk of Pipe Stone, Pipe Stone County, writes:

"A herd of cattle near here have a spreading disease, and I, as member of town board, would like to know if we have authority to restrain those cattle from leaving the herd?"

July 15th, secretary replied:

"If you have good cause to suspect infectious disease you have the right to quarantine till sure there is no such disease, or till it has disappeared. This particularly of diseases likely to be transmitted to or injurious to men. I send laws and specimen of forms and circulars on glanders."

CATTLE DISEASE IN ADELAIDE, BIG STONE, COUNTY.

Under date July 26th, Mrs. J. W. Northrup, of Adelaide, Big Stone County, writes to the governor for advice as to a herd of cattle kept near there that are dying off rapidly:

"People are very much alarmed. The first creature died a week ago to-day; since then ten have died and one more sick this morning; they have lived from fifteen minutes to twenty-seven hours after being taken. Cattle show the disease by becoming lame and stiff in one or more of the legs; breathe short but easy, and have apparently but little pain. Seem to be taken in fore shoulder or hind quarter, and swell from shoulder to knee or from hip to gamble joint; blood settles in swelled portion. On opening immediately after death find the blood coagulated in the heart, but the liver and lungs look natural. Begin to swell before death and continues to swell after until the hide bursts unless buried within twelve hours. They are buried as soon as possible. Have heard to-day of another small herd three miles away which have lost three the same way. Something should be done, as we have done all we can here, and our veterinary surgeons do not seem to understand the case."

July 30th, secretary replied to Mrs. Northrup:

"Madam, I am this moment in receipt of your letter, sent Gov. Hubbard, about cattle disease in your town. Your cause is very clear, but you do not write in what *town* the infected cattle are. I send a notice for the board of supervisors, who are a board of health; fill in the address with the name of the board (town name), and serve the notice upon the chairman or clerk; they will employ at the expense of the town a competent veterinary surgeon to examine and report. I thank you for the notice sent and ask that you promptly serve the inclosed letter."

In this letter was inclosed full direction, in brief as follows:

"July 30th. Board supervisors, town of ———. This disease is one which may become a danger to men. You have authority to quarantine all suspected cattle in a place by themselves, where they can have no communication with healthy, or infect the water, or the grass upon which healthy cattle are to graze; this done, employ a competent veterinary surgeon to investigate and report to you a full description of the disease, its history, number taken sick, number recovered, and dead, with appearances found in the body after dead; bury the dead deeply in the most secluded spot possible; act promptly and write full details of action. By thorough quarantine of sick and suspected cattle you gain time to decide what steps further to take. Permit no healthy cattle to range over land which has been occupied by sick cattle."

July 30th, secretary notified governor of above instructions.

CITY INSPECTION

OF

NUISANCES.

REPORT FOR ST. PAUL FOR THE YEAR ENDING MAY 31, 1884.

St. Paul, Minn., Nov. 17, 1884.

Chas. N. Hewitt, M. D., Secretary State Board of Health,

Dear Sir: Your favor of the fourteenth inst. received and contents noted. Inclosed you will find reports of assistant health inspector and slaughter houses, as requested.

Yours very respectfully,

Henry F. Hoyt,
Health Officer.

REPORT OF THE SLAUGHTER HOUSES IN SECOND AND FOURTH WARDS, BY ASSISTANT HEALTH INSPECTOR, P. H. McMANUS.

Van Hoven's slaughter house, situated on Stuart Avenue, slaughtered 7,200 last year; the offal and blood of same are shipped to the rendering company.

T. J. McMillen, upper levee near the stock yard, slaughtered 1,800 during the last year; offal dumped in the river.

Minnesota Transfer Packing Co., upper levee near stock yard, five hundred head; offal and blood taken to the Fertilizing Company.

Mat. Muller, on West Seventh Street. (Could not get a satisfactory report; he was evidently afraid of arrest. The only report that could be found was about one hundred head last year.)

REPORT OF ASSISTANT HEALTH INSPECTOR, JOHN PATTERSON.

Slaughter house owned by John Marty, East Seventh Street, slaughters five hundred and fifty head per annum; offal, blood, etc., taken by St. Paul Fertilizing Co.

REPORT OF ASSISTANT HEALTH INSPECTOR PATTERSON FOR YEAR ENDING MAY 31, 1884.

1883.	Nuisances Abated.	Dead Animals Removed.	Arrests Made.
June	237	4	9
July	170	2	8
August	180	2	2
September	150	6	4
October	157	3	2
November	128	2	1
December	92	3	1
1884.			
January	89	2	0
February	103	2	0
March	146	0	1
April	187	3	2
May	170	3	0
Total	1,809	32	30

REPORT OF ASSISTANT HEALTH INSPECTOR COSTELLO FOR YEAR ENDING MAY 31, 1884.

1883.	Nuisances Abated.	Dead Animals Removed.	Arrests Made.
June	230	11	4
July	184	6	4
August	204	3	0
September	170	6	2
October	162	8	1
November	135	7	1
December	142	1	1
1884.			
January	60	5	1
February	45	5	0
March	34	3	0
April	75	4	0
May	155	3	1
Total	1,596	62	15

REPORT OF ASSISTANT HEALTH INSPECTOR M'MANUS FOR YEAR ENDING MAY 31, 1884.

1883.	Nuisances Abated.	Dead Animals Removed.	Arrests Made.
June	85	6	3
July	171	7	2
August	177	3	1
September	194	4	3
October	158	2	0
November	137	2	1
December	128	1	0
1884.			
January	93	2	0
February,	44	1	0
March	42	6	0
April	67	10	1
May	69	10	1
Total	1,365	54	12

REPORT OF ASSISTANT HEALTH INSPECTOR MEYERDING FOR YEAR ENDING MAY 31, 1884.

1883.	Number loads garbage sent to dumping ground.	Cubic feet night soil.
June	1,503	12,000
July	1,315	12,000
August	1,318	12,000
September	943	12,000
October	825	12,000
November	683	12,000
December	600	12,000
1884.		
January	393	12,000
February	349	12,000
March	819	12,000
April	2,902	12,000
May	1,861	12,000
Total	13,511	144,000

SUMMARY OF TOTALS OF ASSISTANT HEALTH INSPECTORS' REPORTS FOR YEAR ENDING MAY 31, 1884.

Total number number of nuisances abated	4,766
Total number dead animals removed	148
Total number arrests made	57
Total number loads garbage received at dump	13,511
Total number cubic feet night soil received at dump	144,000

Garbage is carried to city dump, foot of Eagle street. Night soil is deposited in Mississippi River.

HENRY F. HOYT, M. D.,
Health Officer.

REPORT OF MINNEAPOLIS.

Under date Nov. 14, 1884, Dr. Thos. F. Quinby, health officer of Minneapolis, reported:

"Yours of the 13th instant at hand. Some time ago I mailed you the only yearly summary which has been issued since March, 1884. Inclosed you will find another. As regards the dumping during the months of April and May, we averaged 275 loads of manure and offal per diem; During the summer months, about 150; and now, about 100. The night soil has been dnmped into the Mississippi river at about an average rate of from 17 to 20 loads a night. I will endeavor to investigate the slaughter house this afternoon and re- port to-morrow."

Under date of November 15th, Dr. Quinby again wrote:

"I investigated slaughter house at Twenty-sixth Avenue, North, and First Street, and find that, on an average, twelve animals per diem are slaughtered. The manure is removed by farmers. The other offal is eaten by pigs. The yard is two or three blocks from the river and such is the topography of the ground that it is impossible for blood or other liquids to run into the river. I do not think the river water is polluted by it. The principal objection is the stench in the summer months."

QUESTIONS UPON HYGIENE FOR EXAMINATION OF TEACHERS OF PUBLIC SCHOOLS.

INCLUDING THE SERIES FURNISHED BY THE SECRETARY OF THE STATE BOARD OF HEALTH FOR 1883 — AND ANOTHER SERIES USED BY THE SUPERINTENDENT OF PUBLIC INSTRUCTION IN 1884.

Jan. 25, 1883, secretary wrote D. L. Kiehle, Superintendent of Public Instruction, St. Paul:

"Inclosed find draft of questions which you asked me to prepare for use in examination of teachers so arranged that the examiner, while requiring answers to all from all, can graduate the answers as respects the amount and quality of information, to the grade and opportunity of each teacher."

QUESTIONS USED IN SPRING OF 1883, PREPARED BY THE SECRETARY OF THE STATE BOARD OF HEALTH.

Hygiene.

1. Define hygiene, state? town? family? and state what you know of the laws of Minnesota relating to health.

2. Why should hygiene be taught in the public schools? How would you teach it?

3. Does hygiene include the sanitary care of mind and body alike? If so, how?

4. Describe the composition and uses of common air as repects health.

5. Can you discover impurities dangerous to health existing in air? Give any tests you know of and can use.

6. Give the difference between the expired and inspired air, as respects health, and state what you know of dangers to health in the air of inhabited rooms.

7. How many cubic feet of air space should be provided for each child in school rooms; and why?

8. Define ventilation as used in school rooms, and state what you know of the general principles on which it is based.

9. What method of warming school rooms is best for health; and what are its relations to ventilation?

10. What should be the average of temperature of school rooms? How would you secure it in winter; in summer?

11. What is the composition and use of water as respects health?

12. How would you judge of the purity of a sample of water? Give such tests as are known to you and which you can use:

13. What is a contagious or infectious disease? Name as many as you know, and state how you would protect your school from them?

14. What are the laws of Minnesota concerning contagious and infectious diseases?

15. Define exercise. State its advantages and the best methods of its use in school.

16. As respects eyesight, give your plan for lighting and arranging a school room, as also the best type and color of paper for school books.

17. How do you explain the headache and pain in and around the eyeball, so frequently complained of by scholars, and how

would you avoid them and similar ailments among school children?

18. Are you careful of your own health, and do you practice yourself what you teach children?

19. What books in hygiene or physiology have you studied? Which has been of the most use to you?

20. What instruction in hygiene have you given during the past year to school children under your care?

NOTE—The laws of Minnesota relating to health, and facts upon contagious diseases may be procured of the State Board of Health, free of charge, by sending postal card with address to

DR. CHAS. N. HEWITT,
Secretary State Board of Health,
Red Wing, Minn.

QUESTIONS FOR 1884, NOT PREPARED BY THE SECRETARY OF THIS BOARD.

[All grades, September, 1884.]

Hygiene.

1. Define hygiene.

2. How would you check the flow of blood from a wounded vein in the arm?

3. Mention four common causes of taking cold.

4. Why is flannel a more healthful fabric for clothing than cotton?

5. Why is ventilation necessary to health?

6. Describe two simple contrivances for letting fresh air into a room without its forming a draft upon the inmates.

7. From what direction should light reach the eyes of pupils?

8. Why?

9. How would you prefer to have the windows of a school room located?

10. Why?

11. Mention at least four particulars in which it is the duty of the teacher to prevent injury to the health of his pupils.

12. What prevents any marked increase in the temperature of the human body?

13. If health is to be preserved, what rules should be observed in eating?

14. Why?

15. What change of diet should be made by persons changing from an active to a sedentary life?

HEALTH ORGANIZATIONS FOR CITIES.

A LETTER TO THE ST. PAUL CHAMBER OF COMMERCE BY CHAS. N. HEWITT, SECRETARY STATE BOARD OF HEALTH.

March 29, 1883, Dr. Hewitt having been invited by a vote of that body to address the St. Paul Chamber of Commerce, upon the sanitation of the city, was unable to attend, but sent the following paper to the secretary, J. A. Fogg. The paper was read at the meeting and the thanks of the chamber voted therefor:

"The danger of all such movements as you have begun is the wasting of enthusiasm and strength in talk and discussion, without corresponding *result in work.* The plan which I offer you is the outcome of several years' study of the general subject of public health, and of the history of very many efforts similar to your own for sanitary reform. This plan provides for immediate practical effort, as well as for the longer and harder work of a sanitary survey.

"How best to secure for citizens of St. Paul the longest and healthiest life and the most freedom from disease and premature death, by sanitary effort. In this paper I shall be able only to outline a plan for doing the proposed work. To state the evidence upon which the plan is based would take more time than has been allotted to me. The object of the present movement would be two fold.

"First—To secure the prompt, thorough and impartial execution of existing laws and regulations for the promotion of public health in the city.

"Second—to begin to carry out such independent sanitary survey of the whole city as shall develop its actual needs and afford the only true foundation upon which can be based the future sanitary reform and work.

"The first object is of greatest present importance. It affords a wide field for abundant and necessary work. The existing laws, state and municipal, are the result of long experience, here and elsewhere, and if *enforced* will be found of the greatest practical value.

"To assist in securing their enforcement is the first duty of the chamber and of all good citizens if the movement means business.

"There are various ways for such co-operation, the following, perhaps, as good as any:

"If the chamber will undertake it, let there be appointed for each ward of the city an active and earnest committee, to consist of at least one physician, one lawyer, and another active, influential citizen, whose duty it shall be: First, to become familiar with the existing sanitary laws. Second, to insist upon the execution of such laws and to co-operate with the health officer and board of health to that end. Third, to report monthly if you please (and in spring, summer and fall, this should be the rule), to a public meeting of the chamber, the sanitary condition of their ward, its vital statistics, and such suggestions as their work has prompted.

"No more welcome or efficient help could be afforded to the health officer in his always difficult and often delicate duty, and no more effective stimulant to all whose duty it is to execute the sanitary law.

"But (and this seems to me most important of all) while you are enforcing law you are, by the publication of such reports, and by the personal enthusiasm and activity of your committees creating *public opinion* by educating all classes into a better knowledge of their own and the city's needs in matters of health. The chamber will learn two other important facts: 1st, That the efficiency of your board of health is largely dependent upon *intelligent* popular support, and that support can very often be most efficiently given in the city council. 2d, That sanitary work of whatever sort demands a thorough conviction of its necessity, to maintain the continuous and sustained effort essential to its success, and that causes of ill health, disease and death are not to be destroyed by one battle, however brilliant and successful, but rather by the constant and often wearisome use of means commonplace and ordinary in themselves; by hard work. In the lowest commercial sense such work pays; the value in results of longer life, better health and greater ability to do is out of all proportion to the cost.

"The doing well this first work to be undertaken is the best preparation for the doing of the second, which is:

"To begin and complete an independent sanitary survey of the whole city as shall develop its sanitary needs and upon which can be based plans for 'future sanitary reform work.' This survey should consist, 1st, in a house to house visitation of every dwelling house in the city, classified as private, boarding, hotel, etc.;

2d, in an inspection of every manufactory and workshop, classified by trades, etc.; 3d, in an inspection of all places of amusement, saloons, halls, theatres, etc.; 4th, a special survey of trades or places of business dangerous to public health or liable to become nuisances; 5th, an inspection of all sources of water supply, streams, springs, cisterns, wells and lakes; 6th, a survey of existing system for disposal of sewage, garbage, etc.; 7th, the vital statistics of the city for a series of years, with meteorological condition for the same period.

The object of each of these investigations to be their relations to public health alone, and the reports to be made to the chamber as soon as completed. It will be found most convenient to require a preliminary report as soon as practicable, giving abundant time for the detailed reports afterwards. The committees should be small; three hearty and competent workers are enough. One at least should be a physician; and the work could be done by wards as in the first place, taking first the wards most in need of sanitary work.

If it be objected that this plan demands time, brains, devotion, enthusiasm and very likely money, it must be admitted that it does.

Perhaps the chamber may think best to promote a citizens sanitary association to do this work; that was proposed several years ago in your city, by the writer, in a paper cordially indorsed by several of your leading citizens. Other cities, as New Orleans, Newport, R. I., and Lynn, Mass., have such organizations of a very effective character. Why not St. Paul?

Respectfully yours,
CHAS. N. HEWITT."

NOTE: The following papers are printed for convenience of reference, as relating to matter about which questions are frequently propounded to the secretary.

HOSPITAL CONSTRUCTION.

Jan. 16, 1883, secretary made following suggestions in answer to inquiry for plans of a new hospital building by intending architects:

"Prefer to *see* plans, and not *suggest* them; will examine yours for the doctor with pleasure, if sent. These things are *necessary* in any plan:

First — Separate the administration, including kitchen and laundry, from the wards.

Second — Isolate all water closets so that a cross through and through ventilation cuts off all escape of odors into wards or halls, and warm them so as to prevent freezing and facilitate ventilaton.

Third — Abundant air space and light in every ward.

Fourth — Whatever system of heating or ventilation is used, provide open fire in every ward.

Fifth — Floors should be of matched oak or hard pine, oiled; wainscotes of hard wood, oiled; walls hard finish and painted.

Sixth — Wards are better if of one story; administration building may have two; operating room with sky-light.

Seventh — Dead house separate.

Eighth — Sewers outside foundation, separated from inside pipes by air traps, and all pipes inside or outside building so arranged as to be easily examined at any time."

THE QUESTION OF STORING A BODY DEAD OF INFECTIOUS DISEASE IN A CEMETERY VAULT DURING WINTER.

Jan. 26, 1884, A. B. Cole, health officer of Fergus Falls, writes:

"A patient dies of contagious disease; have the friends a right to deposit the body in cemetery vaults during winter? *E. g.*, we have a body in the cemetery vault that died with diphtheria, by permission of the local board of health, because the ground is frozen seven feet deep, making it impossible to dig a grave. There are people here who are complaining of this act. We await your instruction."

January 30th, secretary answered:

"If the body was wrapped in disinfectants for the burial, the coffin tight in a tight out-box, and frozen, I see no danger; it should be buried before the body thaws out in the spring; I would put such a body in a tight coffin, and the coffin in a tight box filled with sawdust saturated with zinc chloride. Do this and you may safely store the body dead of infectious disease in a cemetery vault so long as it is frozen."

EXAMINATION OF SUSPECTED FOODS—ST. PETER.

Under date May 8, 1882, Dr. A. W. Daniels, of St. Peter, wrote the secretary:

"I send you by express a quantity of 'head cheese' for examination. It was made from the head of what was supposed a healthy hog, and contains a small quantity of beef. Some thirty persons have been poisoned by eating of it. None have died, however. The meat was sold and eaten of on Thursday and Friday of last week. Every person that partook of it suffered, and the symptoms came on within an hour or two after eating, and the violence was in proportion to the quantity taken. The symptoms were, at first a burning heat in the stomach, nausea, vomiting, purging, great prostration, cramps and some for a short time lost consciousness. The discharges from bowels at first were offensive, but often became like rice-water, and in some cases bloody. The duration of the symptoms in most of the cases were from six to thirty-six hours, although some are still sick, complaining of great lassitude, aching pains in muscles and loss of appetite.

"Now, doctor, should you think it of sufficient importance, examine it, and do me the favor to report."

May 10th, secretary wrote for detailed account of the outbreak.

Under date May 12, 1882, Dr. Daniels replied:

"Your note asking for further particulars in regard to the poisoning by 'head cheese' at Kasota, is at hand. I saw only three of the parties poisoned, and they had so far recovered as to be able to come to town for treatment; therefore I was obliged to rely upon their statements in regard to the early symptoms. One of these parties was the keeper of a boarding house at Kasota. Of his household twelve partook of the meal, and all suffered,—one only that *did not* eat of it escaped. The effect was in proportion to the amount eaten, and those suffered first who were first at table. So far as I can learn, every person who ate of the meat suffered to a greater or less extent, none escaping. Most of them were strong, healthy Scandinavian quarrymen, a few, women and children. The probable quantity eaten was from one to four ounces. At the boarding house referred to it was served for supper and the symptoms came on within three hours, which were much the same in every case,—heat in stomach, nausea, vomiting, purging (the discharges soon taking on a rice-water character), griping pains, great prostration; some suffering cramps in muscles of legs and body. The duration of these symptoms were from six to thirty-six hours. One woman was sick for five days. All have now completely recovered as far as I can learn.

Very truly,

A. W. DANIELS."

Under date of May 13, 1882, secretary wrote to Dr. Daniels:

"I have examined the sample of 'head cheese' sent by you. It had a stale odor and was in a 'musty' condition. The analysis shows:

"First — The absence of any mineral poison.

"Second — A piece boiled in pure, distilled water gave a dirty soup of offensive odor, evidence of putrifaction.

"Third — Extracted the fat of a quantity, which, upon heating over a water bath, gave an offensive odor, but not so marked as that from the soup.

"Fourth — Under the microscope the muscular fibre looks healthy.

"Fifth — A little of the cheese, mixed with boiled, distilled water, afforded a variety of the lower forms of active life, the so-called bacterium.

"Sixth — Have not yet had opportunity to test it upon any lower animal, but shall make experiment and report.

"So far as I can judge, the probable 'poison' is that peculiar organic ferment of which we have frequent evidence in a variety of prepared animal compounds, sausages, pressed meats, etc. Of a similar character is the 'poison' sometimes found in cheese. In an outbreak of this kind in Red Wing, a few years ago, all who ate the cheese, in however small amounts, had every symptom of cholera, but rallied quickly and permanently. But as if to illustrate the exception to the rule, one dyspeptic and ailing old lady found in the remainder of that cheese (which she bought) just the 'flip' she needed for an improved digestion.

"The exact character of the 'ferment' has never been chemically defined, but it is assumed to be produced by certain kinds of putrefaction in such composite animal foods. The lesson is to avoid the use of all *stale* meat in such products and the preservation of the article from all influences provocative of decay. One can easily understand how, in butcher shops, such products are in danger from the temptation to make them from 'scraps' and remainders.

"I shall be glad to receive from you a detailed account of the outbreak, which will be published in our next report. Any further help I can give is at your service."

Dr. Daniels replied:

"Your note giving result of examination at hand. Many thanks for your early and thorough work in the matter."

ST. PAUL.

Under date Feb. 8, 1884, president of this board, Dr. Hand, writes:

"Inclosed I send specimens of ham and flour taken from a house on Tilton Street, where whole family, five in number, have been poisoned by something. The symptoms are vomiting, head ache, fever and constipation; the two articles are the only ones which we suspect; drinking water from a drive well from basement of neighbor's house, is apparently bad, but as others using the same water are not sick, we could hardly suspect that."

Secretary answered February 9th:

"Flour is tainted with kerosene which stained envelope containing it; the flour is impure and mouldy; I detected mould by means of microscope; the ham is free from all disease."

ROCHESTER.

Under date of Aug. 5, 1884, Dr. F. R. Mosse, of Rochester, Minn., wrote the secretary:

"I send you by express to-day a sample of pressed corned beef made by one of our beef caterers. It was taken from the barrel, boiled in an iron kettle and packed in cloth sacks, and then pressed and kept in the ice room, one sack being brought out at a time and exposed for sale. The sacks were not oiled and hence were pervious, and air could gain ready access to centre of mass. Twenty-six parties, after eating of this meat, were attacked with violent nausea, vomiting, diarrhœa, pain at pit of stomach and through umbilical region; in some cases muscular contractions, cold extremities, pallor, thready pulse and threatened collapse. These symptoms lasting for several hours, then gradually subsiding on administration of opiates, ice and demulcent drinks, and being succeeded by marked prostration of muscular system and anorexia. In one case there was no vomiting or diarrhœa, but within forty-eight hours from taking the beef, marked prostration and a rise of temperature took place. All cases recovered. No urinary change noted.

"Was the beef in a state of ferment, or decomposition, or was there too much nitre used by the butcher?

"In some cases only a very small quantity was consumed, but the same sickness resulted as where larger quantities were eaten. Some specimens looked and smelled badly when I saw them, while others would look and smell all right, these latter specimens producing less severe symptoms.

"All of these cases procured the meat at same shop, and those members of the family that did not partake were as well as usual. Twenty-six cases have come to my knowledge, and how many more have been poisoned I do not know.

Yours very truly,
F. R. MOSSE,
Rochester, Minn."

Secretary wrote in reply to Dr. Mosse:

"The meat you sent I have carefully examined, and find, after protracted examination, that a portion is decomposed, giving off offensive odor when mixed with pure cool water. Boiling destroyed the offensiveness of odor. I know of no way of accurately ascertaining the cause of the sickness, caused by such meat, but suppose it due to decomposition of the nitrogenous elements into what are called organic ferments.

"My examination has been by a variety of experiments, which, as without definite result in a sanitary sense, I will not trouble you with. Shall print your letter in our report, and would be glad of any additional facts you can give by return mail."

Under date Nov. 11, 1884, Dr. Mosse replied:

"Your communication received. In regard to the cases of sickness from poisoned meat, I would say that there were two other families poisoned, numbering in all seven cases, that are not included in the number I reported before. In all the cases the meat was eaten at the midday meal, and symptoms of poisoning developed within from one to two hours, commencing with intense burning pain in the stomach, and soon followed by violent vomiting and free purging. These symptoms subsiding under treatment in a few hours, in most cases without collapse, in others symptoms of collapse developing. Recovery ensued in all cases, with convalescence marked by great physical debility and slow progress."

REPORT TO THE GOVERNOR OF EXAMINATION OF CERTAIN SAMPLES OF KEROSENE OIL SUBMITTED BY HIM, BY DR. HEWITT, SECRETARY S. B. OF H.

KEROSENE EXAMINATION.

March 5, 1884, certain samples of oil complained of and referred to the governor, were sent by him to secretary for examination. March 5th, secretary replied: For purposes of comparison I took two samples of the oil. No. 1 was the oil as received by me with a floculent precipitate, which settled when at rest. No. 2, the same oil, from which the above precipitate and another, a milky one, had been removed, which fell at temperature of freezing; both went to the bottom of the vessel together while it was standing in the cold. No. 3, a sample of oil which gave no precipitate before or ofter exposure to cold. Taking the same quantities of these samples, and using the same lamp, but with different wicks, and burning each with (as nearly as possible) the same flame, I obtained the following results:

No. 1 burned six hours thirty minutes, the flame gradually decreased in size and brilliancy, and if burned at the original height gave off an offensive smoke, the wick crusted and charred more than for the other samples.

No. 2 burned six hours exactly, and burned well until near the end of the trial, when the flame was less brilliant and smaller than No. 3, and wick less charred. No. 3 burned five hours and fifty-eight minutes; gave a brilliant flame all through the trial, and there was not more than one-fourth the charring of No. 1.

Filtering off the precipitates from a sample of No. 2, and heating them with warm ether, I got a gummy, dark deposit on the filter; and what appeared to be paraffine in solution in the ether. It was, at any rate, a heavier product than good kerosene, for it precipitated in the cold, both from ether and from pure kerosene. From these and other tests (all the quantity which I had would permit), I infer that the kerosene sent to me is inferior, in that it contains some of the heavier products, and some of the matters which were left or added by the usual treatment with acid or alkali, all the result of careless manipulation. As to the offensive odor, any kerosene will give it off when the wick is too high or too low. As full and bright a flame as the form of lamp and kind of oil used will give is essential to the perfect combustion of kerosene of any sort.

Kerosene should be colorless and give no precipitate at any temperature, even below freezing, 32° F., and any sample which does not fill these requirements and give a good bright and odorless flame with a clean lamp and wick should be rejected for domestic use. The standard of our law is too low for the flashing test, and should provide other tests of its purity."

Upon this followed the order of the Governor for further investigations.

C. N. Hewitt.

March 25, secretary wrote Henry A. Castle, St. Paul:

"I hardly see my way now to a method of testing illuminating power of oil, "easily understood and readily appliable with practically uniform results." I have instituted a series of experiments in our laboratory and by correspondence with other boards; will give you the results."

THE SANITARY WATER SURVEY
OF THE STATE.

CHEMICAL ANALYSIS OF WATERS
FROM
LAKES, RIVERS, SPRINGS, WELLS AND CISTERNS.

MADE IN THE LABORATORY OF THE STATE BOARD OF HEALTH.

FOR THE PERIOD EMBRACED BETWEEN JAN. 1, 1883, AND AUG. 1, 1884.

ANALYSIS.

	Date of Analysis.	Total Solids.	D'structible Matter.	Free N H 3	Alb. N H 3	Chlorine.	Oxidisable Matter.	Nitrates.	Nitrites.
WELLS.									
Red Wing...............	May 23, 1883.	260.	80.	......	......	20.	....	....	marked.
F. J. McIntire......		15.18	4.67	......	......	1.16	....	....	....
*St. Paul.................	June 24, 1883.	380.	150.	.14	.15	37.	....	trace.	trace.
W. B. Dean..........		22.23	8.77	.0081	.0087	2.16	....	....	....
Frontenac	Aug. 6, 1883.	200.	20.	. ...	......	6.	....	....	trace.
Drive well..		11.69	1.169	......	......	.350	....	....	....
*Brainard...............	Aug. 8, 1883.	240.	70.	......	......	16.	35.	trace.	marked.
Dr. J. C. Rosser....		14.06	4.093	......	......	.935	2.046	....	....
*Stickney Farm......	Aug. 9, 1883.	5040.	1370.	......	......	54.	....	trace.	marked.
near Moorhead....		294.73	80.11	......	......	3.157	....	....	....
Stickney Farm........	Aug. 20, 1883.	550.	150.	......	......	20.	....	....	....
near Moorhead....		32.16	8.77	......	......	1.169	....	....	medium
*Clearwater............	Dec. 12, 1883.	465.	....	......	......	....	....	trace.	trace.
J. D. Wheelock....		26.9	....	.038	.035	....	....	....	....
*Winona.................	May 8, 1884.	488.	74.	.18	......	39.	.034	trace.	trace.
Otto Sontag.........		30.024	4.55	.0011	......	2.45	.0021	....	....
Minneapolis..	June 6, 1884.	481.	123.	......	......	5.	3.	....	....
Mrs. Hamlin........		23.9	7.55	......	......	.35	.18	none.	none.
*Maple Plain..........	July 1, 1884.	499.	166.	......	......	5.	3.5	....	....
John Hinstrom ...		30.7	10.2	......	......	.35	.204	....	trace.
*Albert Lea............	July 25, 1884.	323.	92.	......	......	41.	1.6	....	....
H. O. Brager..		19.83	5.69	......	......	2.57	.093	....	trace.
Average of 4 wells,		373.	93.	......	......	12.75	....	....	....
not mineral nor markedly polluted		20.73	5.54	......	......	.76	....	....	....
LAKES.									
Spring Lake............	May 14, 1883.	40.	30.	.12	.08	3.	....	....	trace.
Minneapolis.........		2.339	1.754	.007	.0046	.175	....	....	....
Big Stone Lake.......	June 22, 1883.	1120.	180.	.40	.08	8.	....	trace.	....
		65.49	10.67	.023	.004	.467	....	....	....
McKusick's Lake ...	July 2, 1883.	180.	140.	......	......	2.	5.26	trace.	....
Stillwater		10.54	8.187	......	......	.116	....	....	....
Dr. B. J. Merrill.	July 21, 1883.	180.	120.	......	......	2.	65.	....	marked
		10.52	7.01	......	......	.116	3.8	....	....
Average..	1883.	630.	117.5	.26	.08	3.75	4.53	....	....
4 spec. 3 lakes		22.22	6.90	.015	.0043	.218	....	....	....
RIVERS.									
Mississippi at.........	May 15, 1883.	240.	80.	.09	.08	5	....	trace.	trace.
RedWing high w'ter		14.035	4.678	.0052	.0046	.2924	....	....	....
Mississippi.............	July 8, 1884.	199.	28.	......	......	5.	7.2	....	....
at Red Wing........		12.26	1.75	......	......	.320	.42	none.	none.
Mississippi	Aug. 6, 1884.	203.	28.	......	......	8.5	5.4	....	....
at Red Wing		12.47	1.77	......	......	.540	.315	none.	none.
Mississippi..............	Aug. 5, 1884.	223.	24.	......	......	9.	3.6	....	....
RedWing water wks		13.72	1.5	......	......	.58	.21	none.	none.
Average..................		216.	40.	......	.....	6.9	5.4	....	....
		13.12	2.42	......	......	.433	.315	....	....
SPRINGS.									
Near Minneapolis...	Aug. 9, 1883.	250.	....	......	......	10.	2.5	....	trace.
Mr. Phelps...........		14.62	....	......	......	.584	.146	....	....
On Cannon River...	Aug. 22, 1883.	300.	40.	......	......	6.	....	....	trace.
		17.54	2.33	......	......	.35	....	....	....
Open Spring	July 11, 1884.	370.	20.	......	......	9.	4.4	....	trace.
Dr. Sanberg.........		22.8	1.28	......	......	.88	.25	....	....
Average..........	1883 and 1884.	307.	30.	......	......	8.	3.45	....	....
3 springs..............		18.32	1.80	......	......	.505	.198	....	....

ANALYSIS—*Continued.*

	Date of Analysis.	Total Solids.	Destructible Matter.	Free NH3.	Alb. NH3.	Chlorine.	Oxydisable Matter.	Nitrates and Nitrites.
CISTERNS.								
Mr. Tubmer's..........	May 28, 1883.	110	55	.48	.112	8	....	Nitrites
		6.43	3.21	.028	.006	.467	....	marked
Mr. Tubmer's..........	May 28, 1883.	100	45	.4	.112	8	....	Nitrites
		5.85	2.63	.023	.006	.467	....	trace.
Average..................	....	105	50	.44	.112	8	....	
		6.14	2.92	.025	.006	.467	....	
ARTESIAN.								
Red Wing................	May 15, 1883.	400	30	.72	.10	79	....	Nitrites
At railway station		23.39	1.75	.042	.005	4.69	....	trace.
Red Wing................	May 19, 1883.	380	25	.68	.08	79	....	Nitrites
At railway station		22.22	1.46	.039	.004	4.61	....	trace.
Red Wing................	Oct. 10, 1883.	350	....	.109	.041	72	....	Nitrites
At railway station		20.49	....	.0064	.0024	4.2	....	trace.
Red Wing................	June 9, 1884.	328	30	....	....	72	.76	
At railway station		20.19	1.85	....	....	4.43	.044	
Red Wing................	June 30, 1884.	346	32	....	....	73	.76	
At railway station		20.19	1.85	....	....	4.45	.044	
Red Wing................	July 1, 1884.	426	46	....	....	76	.6	none.
From tank...........		26.16	2.96	....	....	4.67	.035	
Average..................	....	372	32.6	....	....	75	.53	
		22.11	1.97	....	....	4.51	.025	
ARTESIAN WELL AT RAILWAY STATION, RED WING.								
Taken at 195 ft. deep while drilling......	Aug. 12, 1880.	292	....	....	....	27	....	
		17.04	....	....	....	1.576	....	
At 325 feet..............	Aug. 13, 1880.	352	....	....	....	45	....	
		20.55	....	....	....	2.62	....	
At 444 feet...............	Aug. 14, 1880.	360	....	....	....	51	....	
		21.01	....	....	....	2.977	....	
At 444 feet..............	Aug. 16, 1880.	340	80	.04	.02	51	....	Slight
		19.84	4.67	.0023	.0011	2.977	....	trace.
....	July 25, 1881.	430	40	.24	.12	78	....	Slight
		25.18	2.33	.014	.007	4.09	....	trace.
Averages 6 analyses	1883.	372	32.6	....	....	75	....	
	1884.	22.11	1.97	....	....	4.51	....	
AVERAGES.								
WELLS								
(Not mineral nor markedly polluted)								
76 Wells..................	1879	496.	179.	.13	.09	18.9	....	
	1880	29.06	9.31	.012	.005	1.149	....	
— wells..................	1881	380.	62.	.115	.10	12.	....	
	1882	22.22	3.625	.006	.005	.701	....	
4 Wells....................	1883	373.	93.	....	....	12.75	....	
	1884	20.73	5.54	....	....	.76	....	
SPRINGS.								
17 Specimens...........	1879	420.6	96.3	.182	.108	10.5	....	
	1880	24.55	5.62	.0106	.0063	.61	....	
2 Specimens............	1881	85.	21.	.08	.11	7.	....	
	1882	4.970	1.228	.004	.006	.409	....	
3 Specimens............	1883	307.	30.	....	....	8.	3.45	
	1884	18.32	1.80	....	....	.505	.198	

ANALYSIS — *Continued.*

AVERAGES— *Continued.*

	Date of Analyais.	Total Solidi.	Destruct-ible Matter.	Free NH3.	Alb. NH3.	Chlor-ine.	Oxid-isable Matter.
RIVERS.							
64 spec.—Eleven rivers.........	1879 and 1880.	259.9	78.6	.542	.274	4.05	
		15.17	4.588	.0316	.016	.2365	
Four rivers..........................	1881 and 1882.	225	78	.15	.22	8	
		13.148	4.561	.008	.012	.407	
3 spec.—One river................	1883 and 1884.	214	45	....	....	6.2	6.3
		12.92	2.733	....	....	.384	.367
ARTESIAN.							
Five wells..............................	1881 and 1882.	605	113	.35	.16	100	
		35.380	6.608	.020	.009	5.848	
6 spec.—One well.................	1883 and 1884.	372	32.6	....	....	75	.53
		22.11	1.97	....	....	4.51	.025
LAKES.							
8 spec.—Four lakes...............	1879 and 1880.	147.7	55.2	.298	.313	2.16	
		8.62	3.22	.0174	.0183	.126	
4 spec.—Three lakes.............	1883 and 1884.	630	117.5	.26	.08	3.75	4.53
		22.22	6.9	.015	.0043	.218	
12 spec.—Six lakes...............	1879 and 1880.	308.7	76	.285	.235	....	
	1883 and 1884.	13.15	4.45	.0166	.0136	....	

REPORT

ON

THE METEOROLOGY

OF

MINNESOTA

FOR PERIOD BETWEEN JAN. 1, 1883, AND AUG. 1, 1884.

BY W. H. LEONARD, M. D.

MINNEAPOLIS, August, 1884.

C. N. Hewitt, M. D.,

DEAR DOCTOR: The following is submitted on Meterology through the kindness of S. Marlatt, Esq., St. Cloud; Wm. Cheney, Minneapolis; W. H. Pratt, M. D., Stillwater; J. H. James, M. D., St. Peter; C. M. Hewitt, M. D., Red Wing; J. E. Bowers, M. D., Rochester; D. R. McGinnis, Northfield; also readings from U. S. A. Signal Service stations, viz.: Sergt. E. R. Brace, Duluth; Sergt. H. Bestant, Moorhead; Sergt. P. F. Lyon, St. Paul.

Respectfully yours,
W. H. LEONARD.

TABULAR VIEW OF MONTHLY MEANS.

1882 AND 1883.	NOV'R.		DEC'R.		JAN'Y.		FEB'Y.		MARCH.		APRIL.		MAY.		JUNE.		JULY.		AUGUST.		SEPT'R.		OCT'R.		Annual Mean Temperature.	Annual Mean Humidity.
	Temperature.	Humidity.	Temperature.	Humidity.	Temperature.	Humidity.	Temperature.	Humidity.	Temperature.	Humidity.	Temperature.	Humidity.	Temperature.	Humidity.	Temperature.	Humidity.	Temperature.	Humidity.	Temperature.	Humidity.	Temperature.	Humidity.	Temperature.	Humidity.		
Moorhead	25.8	79.8	6.5	81.5	......	......	......	......	14.1	80.7	39.3	74.1	......	......	......	......	......	......	......	......	......	......	......	......	....	....
St. Paul	34.7	76.8	16.0	77.8	1.1	77.8	12.1	75.9	24.4	65.2	54.5	59.4	52.2	63.6	65.1	72.3	70.2	69.8	66.5	69.9	56.5	70.4	50.0	68.9	41.94	70.65
Duluth	34.3	74.8	17.0	75.6	1.8	75.3	12.9	72.4	22.6	68.6	40.3	65.4	45.5	67.8	59.4	72.5	66.0	65.4	62.8	74.1	54.6	72.5	44.1	73.7	38.44	71.50
Minneapolis	31.0	68.0	11.5	68.0	-2.6	53.0	9.5	62.0	21.9	66.0	43.6	63.0	51.7	60.0	63.1	70.0	70.2	71.0	66.2	70.0	55.4	71.0	42.4	73.0	38.70	66.26
Stillwater	33.6	35.3	15.5	14.2	.6	10.8	14.0	23.3	29.0	31.2	52.7	56.2	63.3	69.0	......	......	......	......	......	......	......	......	......	......	....	....
St. Cloud	34.3	71.7	......	......	- .4	60.6	11.2	56.3	25.4	56.8	45.2	63.6	53.0	64.8	......	......	70.6	66.8	66.6	69.8	57.8	71.3	43.7	68.6	40.74	65.03
St. Peter	34.0	65.6	......	......	- .2	79.2	12.3	84.0	25.3	78.7	47.1	63.5	51.4	64.7	64.0	73.2	72.3	72.9	66.7	72.7	61.5	76.5	43.2	72.0	43.41	73.18
Rochester	33.8	78.5	14.3	79.9	.7	20 d 76.8	8.4	22 d 72.2	23.8	72.6	49.5	67.0	52.1	69.2	66.0	72.3	70.3	73.2	66.0	74.2	56.1	74.7	44.2	82.6	40.44	74.43
Red Wing	......	......	......	......	25 d .2	ays.	22 d 11.5	ays.	18 d 21.6	ays.	25 d 47.2	17 d 58.2	27 d 56.7	ays. 64.4	67.5	69.5	72.4	73.8	70.1	67.8	19 d 60.8	ays. 63.1	......	......	....	....
Northfield	31.5	78.8	13.1	......	-2.0	92.2	10.4	95.6	22.8	92.7	44.1	75.2	50.4	70.5	60.7	80.5	......	......	65.4	73.9	56.0	68.6	44.1	69.3	36.04	79.73
Average of monthly means	32.6	68.8	11.9	66.1	......	......	......	......	23.1	65.0	46.6	63.3	......	......	......	......	......	......	......	......	......	......	......	......	....	....

TABULAR VIEW OF MEANS.

1883 AND 1884.	NOVEMBER.		DECEMBER.		JANUARY.		FEBRUARY.		MARCH.		APRIL.		MAY.		JUNE.		JULY.		Annual Mean Temperature.	Annual Mean Humidity.
	Temperature.	Humidity.	Temperature.	Humidity.	Temperature.	Humidity.	Temperature.	Humidity.	Temperature.	Humidity.	Temperature.	Humidity.	Temperature.	Humidity.	Temperature.	Humidity.	Temperature.	Humidity.		
Moorhead	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
St. Paul	32.8	64.8	19.8	68.2	7.9	88.6	13.3	69.8	28.2	67.1	46.4	61.1	59.0	68.0	69.7	77.6	69.2	75.2	43.27	70.80
Duluth	29.6	75.3	15.7	76.3	5.3	77.6	7.6	72.7	22.1	69.0	36.0	73.2	49.0	67.6	57.7	78.4	62.4	72.7	37.24	73.59
Minneapolis	29.2	66.0	15.1	60.0	3.8	55.0	8.7	62.0	23.6	62.0	43.1	63.0	56.9	60.0	67.7	71.0	66.9	71.0	39.91	65.33
Stillwater	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
St. Cloud	29.5	64.8	....	....	3.7	61.9	8.7	63.0	22.2	63.6	40.2	66.3	55.2	67.7	65.4	66.3	....	....	39.90	66.33
St. Peter	32.1	61.5	17.7	51.4	6.5	52.0	9.4	51.8	26.5	67.3	44.9	69.7	57.7	66.0	68.7	71.5	67.3	77.6	41.85	66.66
Rochester	32.5	78.3	20.0	78.2	6.3	75.5	10.0	75.4	26.5	79.9	44,0	66.6	59.3	63.0	67.6	75.0	67.5	70.3	41.66	74.47
Red Wing	33.3	73.6	(23 d 21.1	ays.) 72.7	7.3	....	8.9	....	26.3	....	(25 d 45.2	ays.) 73.2	....	....	75.6	67.7	72.3	65.9	42.09	....
Northfield	30.9	68.7	17.8	81.8	6.2	93.5	9.3	93.2	24.7	90.7	43.0	77.6	57.2	65.2	71.0	69.0	67.4	73.2	41.00	75.39
Average of monthly means	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....

HIGHEST AND LOWEST TEMPERATURES.

1882-83.	Moorhead.		St. Paul.		Duluth.		Minneapolis		Stillwater.		St. Cloud.		St. Peter.		Rochester.		Red Wing.		Northfield.	
	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.
November	48	—7	54	6	50	10	53	4	62	10	57	8	58	4	61	10	....	....	56	4
December	....	....	36	—18	37	—23	34	—23	40	—15	....	....	....	....	41	—20	....	....	35	—18
January	....	....	29	—31	28	—35	22	—31	24	—30	22	—31	30	—30	25	—30	27	—27	24	—30
February	....	....	46	—26	48	—27	41	—27	50	—22	44	—31	38	—30	46	—24	43	—25	37	—28
March	44	—22	52	— 8	52	13	48	12	55	—5	50	10	52	— 8	43	— 7	44	—10	45	— 9
April	74	6	73	19	62	18	73	22	87	30	73	32	73	28	73	25	73	30	75	22
May	....	....	75	34	71	32	75	33	86	42	72	36	71	36	70	37	78	43	73	32
June	....	....	91	46	92	41	88	45	....	....	....	....	86	49	87	50	91	49	84	45
July	....	....	100	52	99	47	94	57	....	....	97	56	94	51	92	54	98	56	....	....
August	....	....	88	46	86	48	94	50	....	....	88	50	87	52	84	55	94	52	87	44
September	....	....	84	30	79	30	84	29	....	....	78	34	82	33	85	34	78	37	81	29
October	....	....	75	25	64	21	74	19	....	....	75	20	74	25	70	27	....	....	77	19

HIGHEST AND LOWEST TEMPERATURES.

1883-84.	St. Paul.		Duluth.		Minneapolis.		St. Cloud.		St. Peter.		Rochester.		Red Wing.		Northfield.	
	Highest	Lowest.	Highest	Lowest.	Highest	Lowest.	Highest	Lowest.	Highest	Lowest.	Highest	Lowest.	Highest	Lowest.	Highest	Lowest.
November	60	0	54	— 8	59	2	55	—2	62	3	61	— 2	55	0	60	0
December	53	—15	51	—22	49	—21	....	....	49	—22	52	—19	45	—20	57	—19
January	45	—31	44	—31	38	—33	40	—33	40	—34	39	—31	41	—25	41	—29
February	45	—18	30	—19	39	—18	38	—20	40	—25	40	—20	40	—20	34	—19
March	59	—12	53	—16	58	—16	48	—13	64	—12	66	—10	60	—12	62	—12
April	71	22	59	24	72	21	68	20	70	28	70	21	73	28	71	18
May	81	34	79	35	82	35	78	32	78	38	80	34	....	....	80	31
June	90	47	85	39	87	48	87	50	86	52	86	51	90	58	89	43
July	88	51	84	48	87	56	....	....	88	52	86	55	88	55	88	44

TABULAR VIEW OF SEASONS.

1882–83.	Autumn of 1882.		Winter of 1882 and 1883.		Spring of 1883.		Summer of 1883.	
	Mean Temp.	Mean Humid.	Mean Temp.	Mean Humid.	Mean Temp.	Mean Humid.	Mean Temp.	Mean Humid.
Moorhead	44.6	76.6						
St. Paul	49.6	72.6	9.7	77.1	43.7	62.7	67.2	70.6
Duluth	47.3	75.3	15.9	74.4	36.1	67.2	62.7	70.6
Minneapolis	47.4	73.3	6.1	61.0	39.0	63.0	68.5	60.3
Stillwater	53.0	54.8	10.0		48.3			
St. Cloud	48.4	72.6			4 .2	61.7		
St. Peter	49.0	68.9			41.2	68.9	67.6	72.6
Rochester	48.9	73.9	7.8	76.3	41.8	69.6	67.4	72.6
Red Wing					41.8		70.0	70.3
Northfield	48.5	75.8	7.1		39.1	79.4		

TABULAR VIEW OF SEASONS.

1883 and 1884.	Autumn of 1883.		Winter of 1883 and 1884.		Spring of 1884.		Summer of 1884.	
	Mean Temp.	Mean Humid.	Mean Temp.	Mean Humid.	Mean Temp.	Mean Humid.	Mean Temp.	Mean Humid.
Moorhead								
St. Paul	48.4	68.0	13.6	75.5	44.5	65.4	69.0	75.4
Duluth	42.7	73.8	9.5	75.5	35.7	69.9	61.2	76.2
Minneapolis	42.3	70.0	9.2	59.0	41.2	61.6	67.2	73.6
Stillwater								
St. Cloud	43.6	68.2			41.2	65.8		
St. Peter	45.6	70.0	11.2	51.7	43.0	67.6	67.6	76.1
Rochester.,	44.2	78.5	12.1	76.3	43.2	69.8	67.2	73.6
Red Wing			12.3				73.3	66.2
Northfield	43.6	68.8	11.1	89.5	41.6	77.8	66.8	72.8

COMPARISON OF AVERAGE TEMPERATURES.

1882 and 1883.	Nov.	Dec.	Jan.	Feb.	Mar.	Apl.	May	June	July	Aug.	Sept.	Oct.
	Degrees	Degrees	Degrees	Degrees	Degrees	Degrees	Degrees	Degrees	Degrees	Degrees	Degrees	Degrees
Upper Mississippi Valley	39.4	24.1	....	....	....	....	....	....	....	....	....	51.1
New England	38.7	29.9	....	....	....	....	....	....	....	....	....	49.2
Gulf States	56.6	48.0	....	....	....	....	....	....	....	....	....	70.3
Ohio Valley	44.7	34.0	....	....	....	....	....	....	....	....	....	57.0
Missouri Valley	39.3	23.8	....	....	....	....	....	....	....	....	....	47.8
Middle Pacific Coast	50.7	49.2	....	....	....	....	....	....	....	....	....	57.7

COMPARISON OF AVERAGE TEMPERATURES.

1883 and 1884.	November.	December.	January.	February.	March.	April.	May.	June.	July.
	Degrees.	Degrees.	Degrees.	Degrees.	Degrees.	Degrees.	Degrees.	Degrees.	Degrees.
Upper Mississippi Valley	41.8	30.7	17.9	26.5	36.6	49.8	61.8	70.9	73.0
New England	42.7	30.0	24.3	31.6	33.9	44.2	53.6	64.8	66.3
Gulf States	59.2	54.1	41.0	54.9	59.9	63.4	72.6	76.9	82.1
Ohio Valley	47.3	38.2	24.8	39.4	43.4	51.5	63.7	73.5	75.0
Missouri Valley	37.1	26.8	16.0	16.4	33.4	46.1	60.1	72.0	71.8
Middle Pacific Coast	51.5	46.3	47.6	47.6	52.8	56.2	63.4	64.8	69.9

COMPARISON OF AVERAGE PRECIPITATION.

1882 and 1883.	November.	December.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.
	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
Upper Mississippi Valley	2.22	1.72	....	....	....	....	....	....	....	....	....	4.82
New England	1.56	3.00	....	....	....	....	....	....	....	....	....	6.23
Gulf States	3.65	3.42	....	....	....	....	....	....	....	....	....	3.87
Ohio Valley	2.73	2.04	....	....	....	....	....	....	....	....	....	6.75
Missouri Valley	1.16	0.72	....	....	....	....	....	....	....	....	....	4.12
Middle Pacific Coast	4.16	1.53	....	....	....	....	....	....	....	....	....	3.49

COMPARISON OF AVERAGE PRECIPITATION.

1883 and 1884.	November.	December.	January.	February.	March.	April.	May.	June.	July.
	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
Upper Mississippi Valley	2.54	1.66	1.01	2.66	2.90	2.58	3.46	4.00	4.51
New England	2.71	3.40	5.51	6.47	5.04	4.82	4.39	3.29	5.74
Gulf States	5.40	4.37	4.70	4.59	6.93	5.47	7.27	6.40	3.75
Ohio Valley	4.57	5.22	2.98	6.42	3.48	2.62	4.66	2.95	4.21
Missouri Valley	0.68	0.87	0.56	1.30	2.65	4.17	2.59	3.56	6.24
Middle Pacific Coast	0.98	0.63	3.64	4.44	8.06	4.99	0.16	1.66	0.00

LIST OF

CHEMICAL AND PHYSICAL APPARATUS

IN THE LABORATORY OF

STATE BOARD OF HEALTH OF MINNESOTA,

AUGUST 1, 1884.

LIST OF CHEMICAL AND PHYSICAL APPARATUS IN LABORATORY OF STATE BOARD OF HEALTH OF MINNESOTA.

Anemometer.
Balances—
  1 Becker & Son's analytical, No. 7.
  1 common.
Burettes, 3.
Beakers—2 nests—
  1 nest of 4, lipped.
  1 nest of 5, plain.
Bottles—
  16 small, glass stoppered.
  12 medium, ordinary.
  24 varying sizes, ordinary.
  8—2 quart, glass stoppered, for chemicals.
  5—2 quart, ordinary.
  32—1 pint to 1 quart for standard solutions and chemicals.
  1 set, 40 re-agent.
Burners—
  Alcohol blast, 1.
  Bunsen, 2.
Brushes, test tube, 7.
Burette holder, 1.
Bottles, chilling, 10.
Condensers—
  1 Liebig.
  1 distill worm.
Cylinders—
  Graduated, 1, 100 c. c.
  For nesslerizing, 2.
Crucibles—
  1 platinum.
  2 porcelain.

Evaporating dishes—
    3 large.
    2 small.
Funnels—
    1 large.
    7 small to medium.
Flasks, 8—
    8 and 12 oz., 3 each.
    16 oz., 2 each.
    24 and 32 oz., 1 each.
  Ditto, graduated, 4—
    100 c. c., 250 c. c., 500 c. c. and 1 litre, 1 each.
Furnace—
    Gas, 1.
Forceps—
    Iron, 1.
Funnel-holder, 1.
Glass rods, 6.
Glass tubing, 3 pounds.
Lamps, burners and chimneys (stand lamps)—
    1 pint capacity, 4.
    Alcohol, 2.
Measure—
    Graduate, 8 oz.
Mortar—
    Glass, 1.
Microscope, 1, Geo. Wale's economic.
Microscopic slides—
    Anatomical.
Pipettes, 6—
    1 c. c., 2 c. c., 5 c. c., 10 c. c., 25 c. c. and 50 c. c., 1 each.
Psychrometer, 1.
Rubber tubing—
    White, 16 feet.
    Raw black, 10 feet.
Retorts—
    ½ gallon, stoppered, 2.
    1 quart, stoppered, 1.
    1 quart, plain, 1.
Ring stand, 1.
Still—
    Heavy nickel-plated copper, 1.

Spirometers, 2.
Spatula, horn, 1.
Soap dish, 1.
Sand bath, 2.
Trichiniscope, 1.
Test tubes—
  6 inch, 36.
  3 inch, 7.
Test tube rack, 2.
Triangles—
  Iron wire, 2.
Thermometers, 2.
Tripod stand, 1.
Wash bottle, 1.
Wire—
  Stove pipe, 1 bundle.
  Platinum, 1, 7 inches.
Water bath, 1.
Watch glasses—
  3 small.
Wash bowl, 1.

INVESTIGATIONS

OF

KEROSENE OIL, LAMPS AND WICKS.

MADE IN THE

LABORATORY OF THE STATE BOARD OF HEALTH.

REPORT TO THE GOVERNOR.

This investigation was originally undertaken because of complaints to the governor respecting the kerosene sold and used in the State during winter and spring of 1883 and 1884. It was claimed that the kerosene was often solid in the burning lamps, and commonly so at the ordinary winter temperature of cellars; that for some cause the combustion was imperfect and the odors from burning lamps very offensive, and therefore the oil for some cause very inferior for illuminating purposes. In the specimen sent this office for examination by the governor at that time, paraffine was precipitated in considerable quantities at 32° Fahrenheit, separated by filtration, dissolved off the filter with ether and reprecipitated, leaving what is ordinarily known as paraffine wax. For details of that investigation see report.

The present investigation began on the first of July upon eight samples—four presented by the Standard Oil Company and four others, the only specimens procurable in the Red Wing market at the time.

Standard Oil Company samples, first, eocene, second, water white, third, prime white and fourth, head light of their own manufacture; other samples were, fifth, eocene, S. O. C.; sixth, water white, P. C. Hanford & Co., Chicago; seventh, prime white head light, P. C. Hanford and Co., Chicago; and eight, prime white head light, Dubuque Tank Line Company, Dubuque, Iowa.

But one of these, Head Light, Standard Oil Company (fourth), precipitated paraffine at 32° F. All the rest gave no precipitation above 20° F. And yet these oils differed very greatly among themselves when burnt in similar lamps, with the same wick and at the same external temperature. They were very easily separated by specific gravity, and precipitation of paraffine, into two classes. The first (I) class, including Nos. 1, 2, 5 and 6, precipitated no paraffine above 5° F., and gave a specific gravity at 60° F. ranging from .790 to .794.

The second (II) class, including numbers 3, 4, 7 and 8, gave a specific gravity ranging from .811 to .813 at 60° F., and precipitated paraffine at 18° F. and 20° F.

The first experiments of the present series were by freezing, to discover the amount of paraffine wax the oils tested might contain. By an adaptation of the ordinary freezing mixture, we were enabled to secure temperatures ranging from 80° F. (the temperature of the room), to 0° F., and maintain any temperature for such length of time as the experiment being made required. As above stated numbers 1, 2, 5 and 6 gave no precipitation above 5° F., and numbers 3, 4, 7 and 8 did so at 18° and 20° F.

In studying the amount and influence of paraffine in oils the ordinary temperature of the room, 75° to 80° F., made the investigation very troublesome and difficult, so we took another method of arriving at practically the same result. Three experiments were made, two with "eocene" and one with "water white." In eocene, the solid white paraffine wax of commerce was dissolved until the white precipitate appeared at 45°, aud the mixture had specific gravity of .7895 (mixture "a"). In another sample of eocene, the same substance was added until the mixture precipitated paraffine at 23° F.; at 67 F. its specific gravity was .786, which is about same as that of eocene at same temperature (mixture "b"). A series of lamps, numbered 1, 2, 3 and 4, almost exactly alike, and compared in all respects which could affect combustion, were used in these experiments. Of the series, Nos. 3 and 4 were used for the combustion of the above mixtures, and what is known as the Fletcher wick was used in both cases. For comparison a sample of eocene, specific gravity .789, and giving no precipitate of paraffine at 0°, was burned in a similiar lamp and with same kind of wick.

1. The flame of the mixtures remained full as long as that of the eocene, nor did the flame fail entirely in either.

2. No cinders formed on the wick of mixture "a," and only four or five small ones on the wick of mixture "b."

3. Combustion of the mixtures, with the same sized flame, a little more rapid than of eocene.

	Hours.	Minutes.
1 gallon of eocene burned in	98	23
1 gallon mixture "a" burned in	98	40
1 gallon mixture "b" burned in	94	13

4. The temperature (see appendix for method of taking temperature) of the lamp ferrules was higher in the prepared samples, being a difference of 10° (118° and 128°) in extremes in mixture "a," and 12° in mixture "b" (120° and 132°), and in eocene, 11° (113° and 124°). On comparing the mixtures "a" and "b" with each other no great difference was discovered, except that the average temperature of "b" was 4° F. higher than that of "a."

Another experiment with "water white" and paraffine wax was made in lamp No. 4. This oil had sp. gr. at 60° .793, no paraffine precipitated at 0°. In 400 c., used for experiment, 10.934 grams white paraffine wax was dissolved. The mixture ("c.") had a specific gravity, at 60°, of .795, and precipitated paraffine at 59° F., and contained 3.45 per cent by weight of added solid paraffine. 355 c. c. (¾ pint) of this mixture was put in lamp No. 4, and same amount of the same oil, without paraffine, in lamp No. 2, and were burned with Wamsutta wick. The rate of combustion was:

Of oil alone ....1 gallon in 97 hours 47 minutes.
Of mixture "c"..............1 gallon in 101 hours 20 minutes.

The three-fourths pint of the oil burning in nine hours and ten minutes, and that of the mixture "c" in nine hours and thirty minutes; while the flame of the oil remained full size until the close of combustion, and that of the mixture failed during the last half hour. In neither were there any cinders on the wick; no great charring of the wicks, nor crusting of the burner. During the combustion of the mixture, the temperature of the room fell to 53° F., with consequent considerable precipitation of paraffine from mixture "c." This condition of things lasted for about thirty minutes, and there was no appreciable change in the size of the flame. Temperature of brass ferrule of the lamp in which mixture was burned, ranged from 117° to 126° F., the temperature of the room ranging from 53° to 65°.

These experiments led to another series with the heavy oils, Of eocene specific gravity .789, no precipitate at 0°; 280 c. c. were taken, to this was added 75 c. c. of "Zone oil," a lubricant oil furnished by the Standard Oil Company, having a specific gravity above .850. This mixture "d" in amount 355 c. c., specific gravity at 60° .812, precipitating paraffine at 0°, with a flashing point of 122° F., contained 21 per cent by volume of heavy "Zone oil." It will be noticed that its specific gravity differs but little from that of prime white head light; that the flash is a little higher than that of prime white head light purchased in the stores of this town, and the point of the precipitation of paraffine is 20° lower.

This mixture (d) was burned in lamp No. 2, with Woodberry wick. Its phenomena, compared with those of prime white head light, burned with Fletcher wick, in similar lamp, were—

First—Flame began to fail about same time, during seventh hour.

Second—There were fewer cinders; none in the mixture flame until the last two hours, while in the prime white head light flame they began forming during second hour from beginning of combustion.

Third—Temperature 20° to 30° lower in mixture lamp ("d"); extremes of mixture (d) 111° to 132° heavy oil; white head prime light, 122° to 196° F.

Fourth—The rate of combustion nearly the same in both, with one exception (Table I Exper. C.) where the mixture (d) burned slower.

Again, mixture "d" compared with prime white head light using the same wick (Woodberry), we noticed—

First—That the flame of the mixture (d) failed sooner.

Second—Cinders same in both.

Third—Average temperature of brass ferrule of mixture lamp (d) 13° less than than that of the oil.

Fourth—Rate of combustion slower in mixture (d):

1 gallon of mixture burning in 117 hours; while

1 gallon of prime white headlight burned in 101 hours.

The average time in this experiment of combustion of 355 c. c. of prime white head light and the mixture (d) was about eleven hours, and during the last third of the time the flame was, as far as illuminating purposes are concerned, an utter failure. In both cases there were produced an offensive odor and cinders. Raising the wick only increased the difficulty; and in one case the wick was trimmed after the flame had began to fail, but no improvement in the size of the flame resulted.

Now occurred the question, is there an accumulation, during the combustion, of the heavy or paraffine oils in the wick? To answer which the following experiments were tried, every precaution being taken to secure accuracy in results.

With the same kind of wick of known weight in each case and with the same oil, prime white head light, four lamps almost exactly alike were used. In the first was burned eight ounces. In the second sixteen; in the third twenty-four, and in the fourth thirty-two ounces, till combustion was completed in each case. The wicks were then removed, weighed (wet) separately and then washed, in ether or carbon bisulphide, for removing the oils and then dried, so that the weight of the washed and dried wicks subtracted from the weight of the wet wick in each case gave the weight of the petroleum products which each wick contained at the close of combustion.

The following are the results:

The weight of oil from wick through which 8 ounces had been burned was 3.145 grains.

The weight of oil from wick through which 16 ounces had been burned was 2.695 grains.

The weight of oil from wick through which 24 ounces had been burned was 2.615 grains.

The weight of oil from wick through which 32 ounces had been burned was 3.050 grains.

The oil so washed from each wick was then evaporated for three and a half hours on a hot water bath (it may be mentioned in this connection that in all evaporation of oils tried they continued to lose weight up to the time that evaporation was stopped). In the above, the oils remaining after evaporation were: In the first 52.8 per cent; second 60 per cent; in third 59 per cent; in fourth 65.8 per cent of the weight of the oil washed from the wicks, respectively.

The wet wicks from the combustion in various experiments with other oils were treated in the same way.

The weight of heavy oils left after evaporation, was:

In eocene—13.1 per cent to 17.0 per cent;

In water white — 28 per cent to 28.4 per cent;

In prime white headlight — 47.4 per cent, 50.9 per cent and 54.3 per cent, of the total weight of oil washed from the wick in each case respectively.

For purposes of comparison, the experiment of evaporation for three and a half hours was tried upon the various kinds of oil before use, with following results:

Weight of heavy oil was,

In eocene — 15.6 per cent.

In water white — 22.5 per cent.

In prime white headlight — 49.4 per cent of total weight of oil taken for evaporation, in each case respectively.

From the result of these experiments it will be seen that there is little or no accumulation of paraffine oils in the wicks during combustion.

The converse of the question, viz.: Are the lighter oils burned first, was tried.

Of 400 cc of prime white headlight, 245 cc were burned off, leaving 155 cc still in lamp. Trial showed that in specific gravity, and point of precipitation of paraffine, this residue did not differ at all from the prime white headlight used.

Incidentally another question arose: Is there relation between specific gravity and amount of paraffine wax in oils?

Mixture "a" (of these experiments);

Eocene — precipitating no paraffine at 0°,
Had specific gravity at 60°, of.................... .789
Mixture a — precipitating paraffine at 44°,
Had specific gravity at 60°, of.................... .7895
Mixture "b"
Had specific gravity at 67°, of.................... .786
Water white (?)
Had specific gravity at 60°, of.................... .793
Mixture "c"
Had specific gravity at 60°, of.................... .795
Mixture "d"
Had specific gravity at 60°, of.................... .812

From this last mixture, paraffine was precipitated at 0° and not above.

What effect has the make and material of the wick upon combustion?

Answered by burning the same oils, in the same lamps, in the same quantities, at the same external temperature, with *two* kinds of wicks — the *Woodberry* and the Fletcher — the last the one ordinarily sold in stores, and the other one sent by the Standard Oil Company, and claimed to be an improvement.

Using oils of class I, with the Woodberry wick, the flame remained full to the end of combustion.

Using oils of class II, the flame remained full during four-fifths of the time of combustion.

In oils, class I, there were no cinders; in oils, class II, they did not appear until the last one-fifth of time of combustion, while with the Fletcher the cinders appeared and remained during the last half of the time of combustion.

c. Temperature, of oils, class I, not taken while burning with Woodberry wick; of oils class II, it was reduced; *e. g.*, an oil of this class gave a maximum of 144° with Woodberry wick and of 176° with Fletcher wick.

d. The Woodberry wick admits of a longer draft. In oils class II. a draft of 4⅞ inches, which is from ⅜ to ⅝ inches longer than the draft allowed by the Fletcher wick.

e. Rate of consumption, *i. e.* time of combustion of a given quantity, is shorter with Woodberry wick.

	Hours.	Minutes.
Of eocene,		
With Fletcher wick,		
One gallon burns	99	23
Woodberry wick,		
One gallon burns	84	27
Of water white,		
With Fletcher wick,		
One gallon burns	103	39
With Woodberry wick.		
One gallon burns	94	13
Of prime white head light,		
With Fletcher wick,		
One gallon burns	109	33
With Woodberry wick,		
One gallon burns	101	33

PHOTOMETRIC TESTS.

In the absence of apparatus specially manufactured for this purpose, we were compelled to devise the following for use in our experiments.

Possible source of error — in the burning of the candles —

candles were made of spermaceti, bought at a store in this town, were cast in a mould slightly conical in shape, and in burning presented more surface to the burning flame at each succeeding minute.

A perfectly dark room, constructed in the laboratory. lined with black paper and cloth, containing a table on which at ten feet distance were placed the candles and lamp under examination, with movable screen between, constituted the apparatus for making the experiments.

The method consisted in—

First—Weighing candles before use.

Second—The lamp to be tested and candles being placed in their respective places on the table, ten feet apart, the dark room being closed, the screen was moved until point was found where the lights were of equal intensity, the distance of which point from candles was measured and recorded. The same was repeated with several screens of different colors—white, red and blue paper and brown card board being used—all these screens were not used in every case.

Sometimes one combination and sometimes another being used, the average always being taken where more than one color or screen was employed.

Third—The estimation of the candle power, distance in feet from the candles of the point of equal intensity of the lights (or the average if more than one screen were used), being called a, the estimation was made by following formula:

$$\begin{array}{ccl} \text{Candle power of lamp.} & \text{No. candles used.} & \\ X & : \quad 2 & :: (10-a)^2 : a^2 \end{array}$$

$$X = \frac{2 \quad (10-a)^2}{a^2}$$

The determination of X from this equation gave the candle power sought, provided the candles burned the required amount.

Fourth—Correction for variation in amount burned in candles. After burning, the candles were again weighed and amount burned determined by subtracting weight after burning from weight previous to burning. The amount burned and time of burning being known, the rate of burning per hour was easily found. Call it b, candle power of lamp as corrected X^1.

The estimation of correction would be made by the following formula:

Grains 2 candles should
burn per hour.

$$240 : b :: X : X^1$$

$$X^1 = \frac{b \quad X}{240}$$

The following are the results obtained with different oils, different wicks, and different drafts:

"A" WOODBERRY WICK.

	Candle power.
I. Eocene oil.	
(1) With draft 3½ inches (about)	11.84
(2) With draft 4⅜ inches	11.80
II. Water White, Minnesota test.	
(1) With draft 3⅝ inches	10.51
(2) With draft 4⅜ inches	11.93
III. Prime white head light.	
(1) With draft 3⅝ inches	14.33
(2) With draft 4¼ inches	9.27

"B." FLETCHER WICK.

	Candle power.
I. Eocene.	
(1) With draft 3⅜ inches	8.66
(2) With draft 4½ inches	6.12
II. Water white, Minnesota test.	
(1) With draft 3⅜ inches	8.15
(2) With draft 4¼ inches	5.99
III. Prime white head light.	
(1) With draft 3⅜ inches	10.24
(2) With draft 4⅛ inches	9.45
(3) With draft 4¼ inches	4.08

At the beginning of combustion with both wicks the photometric flame of prime white head light was greatest, but was rapidly lost. The oils which bore our other tests the best, Eocene and water white, proved best here.

Other experiments were made (a) in washing the oils in acid and alkali, (b) in fractional distillation and (c) microscopic examination of the fibres of the wicks, but were not sufficiently advanced to report.

I am able to draw a few conclusions from the above experiments, though incomplete:

First—The names given to the different oils do not imply a constant chemical composition, different specimens of the same "brand" offering considerable differences in many respects.

Second—The presence of as much as 3½ per cent of paraffine wax in an oil, in other respects of the purity of the eocene brand of the Standard Oil Company, did not materially affect the burning qualities of the oil, or, so far as the unaided eye could judge, its photometric power; nor in one sample did the considerable precipitation of paraffine while burning, perceptibly affect the flame.

Third—The temperature of the lamps in which the mixtures were burned was from 5° to 8° higher than that of lamps in which eocene was burned under same circumstances.

Fourth—The mixture of the heavy "Zone oil" of the Standard Oil Company with eocene, in proportion of 21 per cent by volume of the heavy oil, was compared with prime white headlight, the worst oil examined in these experiments, and proved that there was no material difference between them, both being inferior as respects combustion, light and elevation of temperature.

Fifth—The examination of the possible retention in the wicks of the heavy oils, or other matters, developed nothing positive as affecting illuminating powers. It is proposed to carry on this investigation further.

Sixth—As far as our experiments went, I can say that specific gravity afforded no test, practically available in common oil inspection, of the presence and amount of paraffine wax in an oil; but did of the presence of the heavy oils not precipitated by cold.

Seventh—Two kinds of wick were compared—one the Fletcher in ordinary use, and the other the Woodberry wick, furnished by the Standard Oil Company as an improved wick. The latter demonstrated a marked advantage in every respect.

Eighth—The extreme elevation of temperature reached by the ferrules of the lamps, during the burning of the oils of Class II, points clearly enough to the propriety of an elevation of the flashing test to at least 125° F.

Ninth—So far as our experiments went, the heavier oils seem to be the ingredients of kerosene which most seriously affect the combustion and illuminating power with ordinary lamps, burners, wicks and chimneys.

With shallow lamps, better wicks, taller chimneys and better draft, certain of the heavier oils, as for example Merrill's, with a flashing point of 300°, make by far the best light, but without these aids are not available for ordinary use.

Tenth — With lamps, burners, wicks and chimneys as at present constructed, oils of the quality of eocene are the safest, best and cheapest for ordinary use, and it would be better for all if lower grades could be done away with.

Eleventh — With any oil or lamp, cleanliness, and as perfect a combustion as the apparatus is capable of, are essential to the best light and to the greatest safety and freedom from offensive odors.

Twelfth — A careful review of this and similar investigations indicates the necessity of further work in the same direction, especially as respects the construction of lamps, burners, wicks and chimneys, and their relation to the oils in use.

C. N. H.

APPENDIX.

METHOD OF TAKING TEMPERATURE OF BRASS FERRULE OF LAMPS DURING COMBUSTION.

A piece of sheet lead was rolled into a hollow cylinder around the bulb of a Fahrenheit thermometer; the cylinder closed at one end, the other being left open for the removal and insertion of the thermometer bulb whenever desired. One side of the cylinder was then trimmed with a knife into such a surface as to fit exactly on to the surface of the ferrule of the lamp, the thickness of lead between the interior opening of cylinder and the brass ferrule being about one-sixteenth of an inch; the contact of metal, the brass ferrule of the lamp and the lead cylinder being perfect at all points. The lead cylinder was fastened in its place by a piece of copper wire run around the ferrule of the lamp and twisted tightly. During combustion and the taking of the temperature of the lamp, a piece of cardboard was placed above the thermometer bulb and lead cylinder to shut off the heat of direct radiation from the flame.

A PLAN FOR THE COMPLETION OF THE ORGANIZATION OF CONFERENCE OF STATE BOARDS OF HEALTH, PROPOSED BY THE STATE BOARD OF MINNESOTA TO THE CONFERENCE MEETING IN ST. LOUIS, OCTOBER 13, 1884.

NOTE—This board began the effort for a national organization of state boards of health some years ago. In 1879, through the secretary, the matter was formally brought up at a meeting of representatives of such boards at Nashville, Tenn., when a committee was appointed of which the secretary of this board was made chairman. A report, substantially the one here presented, was made at a meeting held in St. Louis in 1880. In the absence of the chairman of the committee it received no attention. There has been apparent all the time, a fear on the part of some of the friends of a national board of health, that the council now proposed would be in some sense antagonistic, and that it would weaken the American Public Health Association by withdrawing the representatives of state boards of health therefrom. Both objections have appeared to this board, to be of little weight as compared with the necessity, *which is constantly increasing*, for a union of State boards of health for co-operation, as specified in the attached plan. At a meeting held in Washington this summer, for the purpose, after the discussion of various elaborate plans proposed by a committee, a temporary organization was effected upon the suggestion of this board through its delegate.

The following plan for the completion of that organization will be submitted at the adjourned meeting to be held next October, 1884, in St. Louis. It is to be hoped that it will, in essential, be adopted there.

This board are firm in the conviction that this is a practicable way to meet a self-evident want, *i. e.*, hearty, intelligent and constant co-operation between the sanitary authorities of states, in inter-state sanitary work, and this irrespective of any national board of health, whose organization does not recognize and seek the co-operation of such state boards of health, as necessarily independent, and whose functions cannot be delegated to, or supplanted by, any other organization.

This organization shall be known as the Council of State Boards of Health of the United States.

The objects of this Council shall be:

1. Closer acquaintance and more intimate professional relations between the executive officers and members of said boards.

2. Better opportunity and facility for the consideration and discussion of subjects belonging to their peculiar department of sanitary study and work by members and officers of said boards.

3. Better facilities for comparing and discussing methods, and for considering mutual relations, and devising plans for mutual co-operation in the following directions:

(*a.*) The collection and collation of the history and statistics of disease prevalence.

(*b.*) Mutual notification of disease prevalence, particularly epidemic diseases.

(*c.*) The interstate control of epidemics.

(*d.*) State legislation for sanitary purpose, and the comparison of the sanitary legislation of the different States, and of legislation necessary to be had by the States.

(*e.*) The common study, by committees, of the history of epidemics as affording a knowledge of their origin, the laws of their propagation and the best means of their control, particularly of any existing epidemics, and the collection and preservation of data and documents which are not to be obtained after their cessation.

(*f.*) The establishment of such relations with similar organizations in other countries as will make available for said boards the latest information as to the existence or spread of epidemics liable to be imported into this country.

(*g.*) To enable any board to ask and receive the advice and experience of other boards as to the details of practical sanitary work in relation to local boards of health; the enforcing of sanitary laws; means of popular enlightenment; how to reach and influence all classes of the people; and make the rules of hygiene operative in trades, and in family and personal life. These and similar questions constantly arising can in this way receive satisfactory attention and discussion from the practical standpoint of active and working State Boards of Health.

To these ends the following shall be the organization of the council:

MEMBERS.

Any State Board of Health officially signing this agreement. Said boards to be represented by as many delegates of its membership as it choose to send. Said delegates shall have the right individually to discuss any questions before this council governed only by the usual rules of deliberative assemblies.

The subject matter for consideration by the council shall be introduced by written resolution offered by any State board, a member.

The votes of the council shall be by states and by ballot, and shall be counted and recorded by states, each State board of health to be entitled to one vote.

The votes of each board to be determined by the delegates of State boards present unless otherwise instructed by their board. A majority of the votes of the delegates of any board present shall be necessary to the vote of said board. A tie vote of delegates shall be recorded as no vote by their state.

A .... vote of all the boards members of the council shall be necessary to determine all questions of the policy or official action of the council.

The regular meetings of the council shall be annual, at such time and place as the preceding meeting may determine, and a .... vote of the boards represented and voting shall be necessary to decide the matter. Special meetings of the council may be called by .... vote of the executive committee hereinafter provided.

OF OFFICERS.

A chairman, to be appointed by the State board in whose jurisdiction the meeting at which he presides is held, notice of said appointment to be served upon the corresponding secretary of the council as soon as made. It shall be his duty, on taking the chair, to review the work of the past year, and such business as is in hand for the present meeting. He will, under the direction of his board, make the necessary arrangements for the meeting place, care of delegates, etc. In case of his absence his board shall appoint a substitute.

A corresponding secretary, to be elected by a .... vote of the members of the council to hold his office for .... years. His duty shall be to conduct the correspondence of the council; to preserve its records; to prepare the business of the meeting so far as the matter in his hands will allow; and to be secretary of the executive committee in the intervals of the meetings of the council.

A recording secretary, to be assigned by the board in whose jurisdiction the council meets. His duty is to keep the records of the meeting and generally to assist the corresponding secretary.

A treasurer, to hold and disburse the funds of the council on its order by .... vote of its members.

An executive committee, to consist of one member elected by each board member of the council, yearly, before the annual meeting of the council. Provided that for 1884-85 the member of the executive committee for each state shall be selected by each board at its next meeting after the adjournment of the meeting of the council held Oct. 13, 1884, and notice of said election forwarded to the corresponding secretary immediately.

This committee shall represent the council in the intervals of its meetings. Its actions taken in the same way and by the same vote as the council itself, and in emergency, shall have the same force as that of the council till the next meeting of the council, as respects interstate control of epidemics.

Its meetings shall be called by the corresponding secretary on a call of one-half the members of the committee by letter or by telegraph.

SPECIAL COMMITTEES.

Upon subjects included in this agreement may be appointed at any meeting as follows: Any board, a member, may by written resolution specify the object of a committee asked for, the number of its members and the date of the report. A .... vote of members present and voting to be necessary for the adoption of such resolution. The members of any committee to be elected by ballot, a majority of members present necessary to an election, the member receiving the largest number of votes to be chairman of said committee.

It is further provided that the expense of the council shall be .... (assessed) upon the members equally; said expense to be determined .... by a.................. vote of all members of the council.

Order of business for all meetings of council or executive committee:

1. Minutes.
2. Report of officers.
3. Report of committees.
4. Communications from State boards of health upon subjects specified in this agreement.

No question or resolution involving changes in this agreement shall be considered by the council till the next annual meeting after its formal introduction by a member, and a three-fourth vote of all the members of the council shall then be necessary for its adoption.

STATE BOARD OF HEALTH,

OF MINNESOTA.

TRACT, NUMBER 2, 1884.

(Revised Edition of that of 1881.)

CONTAGIOUS DISEASES.

WHAT ARE THEY? HOW ARE THEY SPREAD?
HOW TO PREVENT THEM, BY CLEANLINESS, VENTILATION, ISOLATION
AND DISINFECTION.

Copies of this circular may be had of the secretary at Red Wing or of members of the State Board of Health, and local health officers.

CONTAGIOUS DISEASES.

What are they?

Such as are caused by a peculiar, and probably specific, poison. They are spread by the passage of that cause from its place of origin, without or within, the bodies of the sick, to the well.

This class includes: Small pox, scarlet fever, measles, whooping cough, diphtheria, cerebro spinal meningitis, cholera, typhoid fever, yellow fever, erysipelas, puerperal fever, glanders and farcy (varieties of same disease).

Of these, typhoid fever is the most constant and fatal in Minnesota. Next come diphtheria and scarlet fever. Others, as small pox, are very irregular, being introduced by persons from without the State, chiefly foreign immigrants. We have no record of an epidemic of erysipelas. Puerperal fever, a very fatal disease of lying in women, is local and confined chiefly to the country German population. In this State cerebro spinal meningitis has been several times almost epidemic, but is usually sporadic.

Have these diseases other causes than their specific poison?

Probably, yes. All of them are more obstinate and fatal when occurring in insanitary locations and to persons otherwise unwell. Typhoid fever and cholera seem in their origin, and in most of their prevalence, to be what have been so aptly and forcibly called "filth diseases," and are directly related to foul air and water.

How are contagious diseases spread?

In each disease of this class some one part of the body suffers most, and it is from this part that the specific poison is given off, often in enormous quantities.

In small pox, it is the matter (virus), fresh or in scabs, from the inflamed skin.

In scarlet fever and measles, the dried scales or scurf from the skin, and probably the excretions from the mouth and throat.

In Diphtheria, the discharges and membrane from the mouth, nose and throat.

In Typhoid Fever and Cholera, the discharges from the bowels.

The particles of specific virus, so given off, find their way into the air and water and food, on to clothing of the bed and of persons, on to the floor, furniture and walls of the rooms, and, by one or more of these agencies, are conveyed, from the sick to the well. The well may breathe, drink, or eat them, or they may get into the body through the broken skin, as do glanders from horses or the vaccine virus in vaccination. Finally, the dead body may communicate the disease.

The infecting power of diseases varies, and the same disease varies in intensity in different outbreaks and different stages of the same outbreak; but the essential fact is that these diseases are always infectious, and that we have no means of guaging the intensity of that power till too late to prevent it, and should therefore always assume it.

The object of hygiene as regards them is—

1st. To *prevent* their occurrence.

2d. When one of them appears, to limit its outbreak to the fewest individuals and families, possible.

How best to prevent their occurrence at all.

In order of importance:

a. By purity of air and water in the home. This, by the speedy destruction of all excreta and garbage, either by burial or burning; cleanliness, and sufficient ventilation, and dryness, of all parts of the dwelling, including garret and cellar, with the free admission of sunlight everywhere possible.

All of which involves the substitution of better arrangements for the usual privy vault, sink hole, cesspool, and garbage and manure heaps. The object of such care is the removal of all refuse of vegetable or animal origin, fluid and solid, before it shall decompose, and such disposition of it as shall enable its return to the soil in the most natural and perfect way. This work begins in the home as the unit of sanitary work, and is continued and sustained by the action of local boards of health.

b. And largely dependent upon the above, the maintenance of the most perfect health, by all available means, of every member of the family; which implies, in the event of sickness, a search for its cause and its removal or control.

When an infectious disease does occur, how shall we control it?

a. First and foremost, by the *seclusion of the sick*, best done in a special hospital for infectious diseases, provided at public expense with every comfort and convenience which science or the most assiduous care can suggest, and with educated and trained nurses. This will ultimately be done on the score of public economy and efficiency. Now this provision is made only for small pox, and for that in a very insufficient way.

For all other diseases we must, at present, provide in the house of the sufferer. If an *up-stairs* room is available, that is the next best resort. If it have southern or eastern exposure, abundant light, and at least two windows, so much the better. Whatever room is taken, it should have no more furniture than necessary, plain chairs and tables, bed to be single [by preference an iron bedstead and wire mattress], with light hair mattress upon it. Feathers only in the pillows for the sick; no quilts, but blankets; no carpets, but bedside strip or rug; no clothing or bedding except those in use by the patient or nurse.

The nurse should not associate with the family except under regulations to be fixed by the physician.

All discharges from the sick should be immediately disinfected, as hereinafter directed, or burned; which last is the best way of disposing of soiled rags, clothes, etc., which cannot be easily and surely disinfected.

The utmost cleanliness of persons and things must be insisted on. Frequent change of sheets and pillow cases (and of blankets when necessary). Fresh air and abundance of it with abundant light are essential, with the provision that harmful draughts and needless glare are prevented.

As far as possible the ventilation of the sick room should be independent of the rest of the house. With one window in the room this can be done by lowering the upper and raising the lower sash an inch or two and by means of a board directing the air away from the patient. With two windows it can be very easily done. In all weather at all cool there should be a fire in the room, in an open stove by preference, as the heat enables one to increase and control the admission of fresh out door air.

With such provisions as above outlined any infectious disease can be safely cared for in a well built and roomy house with little danger to the family.

The misfortune is that all infectious diseases select, as a rule, first crowded, ill-ventilated dwellings, where the facilities for isolation of the sick are very few.

In such cases it would be better to remove the well (children particularly) to another house, if possibly, leaving the infected house to the patient and nurse. In winter, and in country districts, this is rarely possible; but in warm weather it is easier to do. In any event, cleanliness of persons and things will do much to mitigate the severity of the sickness and the special precautions as to each disease (defined in the tracts thereon) will help still more. The plan of tent hospitals proposed by the secretary of this Board, is worthy of trial, and is recommended to local boards and to individuals. There is no dodging the difficulties which prevent the enforcing of strict seclusion in the case of the poor, sick of infectious disease, nor is there any doubt of its necessity in the behalf of the affected family, the patient, or the community.

Local boards of health, practical men and women, are earnestly asked to study the subject.

Trained nurses, to aid the weary mothers of infected families, are essential, too. Here is an opportunity for Christian philanthropy which calls for immediate action.

Disinfection; what is it?

The destruction of the living particles (the *materies morbi*) capable of conveying the disease from sick to well. The destruction of their *life*, not merely the odor which sometimes accompanies them. It is of two kinds.

First—Of the person and discharges of the sick, and of the clothing and bedding in use while sick.

Second—Of the clothing and bedding; of the sick room and contents after recovery, or, in the event of death, of the body of the dead.

OF THE PERSON AND DISCHARGES OF THE SICK, AND HIS CLOTHING AND BEDDING IN USE WHILE SICK.

Of the person—

First—By anointing the body with some simple unguent, (simple ointment, fresh lard, two parts; white wax or mutton tallow, one part; mix while warm and stir till cold,) which may be scented with any perfume if desired, but better not. This ointment to be gently applied all over the body once or twice daily. In *scarlet fever*, *measles* and *small pox* it serves to retain the virus on the skin or in the clothing, and in these cases should be used regularly till the skin is clean.

In all the other diseases of this class, its use is generally comforting and advantageous to the patient, but is not necessary to disinfection.

After recovery from the diseases specified above, the patient is unsafe till all affection of the skin has disappeared. Then thorough warm baths and cleansing of scalp and beard are essential before release.

Of the discharges from the sick—

These are from the mouth, throat and air passages in eruptive fevers and diphtheria, and from the bowels in typhoid fevers and cholera.

The perfect disinfection of the mouth and throat is impossible with our present knowledge, but the danger from that source may be lessened by cleanliness, frequent gargling and rinsing of the mouth with solution of boracic acid, chlorate of potash, sulphite of soda, or other like deodorant, in the proportion of half teaspoonful of the salt to half tumbler of water; warm water the best. Gargling the throat and rinsing the mouth at the same time and the use of the tooth brush or swab to clean the teeth, gums and inside of mouth, will be of use.

Usually the medical treatment involves the use of antiseptics, and the nurse will be guided by the physician in the matter. In default of his direction the above hints will aid her.

Of course, all matters from the mouth, in such cases, should be immediately destroyed. Clean cotton or linen rags are the best means for collecting them, and should be immediately burned or thrown into one of the disinfecting solutions hereinafter described.

Discharges from the bowels—

In typhoid fever or cholera, the vessel used should always contain a teacupful of one of the disinfecting solutions, and after use, its contents should be immediately burned or buried and then the cleaned vessel be prepared for the next discharge. Underclothing, soiled by these discharges, should be immediately plunged into one of the disinfecting solutions, zinc or soda chloride, before washing.

The poison of child-bed (puerperal) fever is very tenacious and has repeatedly caused great mortality in certain localities. Physicians are very careful in avoiding all danger of carrying the poison, as a rule refusing other obstetric practice when attending such a case. Nurses should be equally so. They have been the means of its spread repeatedly in our State.

In the event of death, what then?

The body must be immediately wrapped in a sheet wrung out of the soda or zinc chloride solution, placed in a tight coffin and as soon as possible buried. Public funerals are very properly forbidden by law; burials must be private and as speedy as is consistent with decency, and a proper regard for the feelings of survivors. The bodies of persons dead of small pox or diphtheria have, in our State, more than once given the disease to persons attending the funerals. Children, particularly, should be forbidden to approach them.

DISINFECTION OF ROOM AND ITS CONTENTS AFTER THE REMOVAL OF THE PATIENT.

This is best done by moist sulphurous acid vapor. (If wire mattress or iron bedsteads have been used, they can be cleaned by washing in hot soap suds and exposing to the sunlight and air. The vapors would be likely to injure or destroy them.)

All bedding and clothing, not disinfected by soaking in the zinc or soda solution, are to be hung up on a line stretched across the room or upon chairs. Straw ticks should be disinfected first, with their contents; afterwards their contents burned, and ticks washed. Hair mattresses to be opened and hair well stirred up and mattress hung upon chairs; blankets also to be hung up. These things done, close all the windows and openings of the room except one door; in the centre of the floor put a wash tub containing hot water to the depth of two or three inches; upon a brick in the centre of the tub put a pan or spider containing two pounds of roll sulphur well broken up, pour on half a teacup of alcohol, light it and leave the room, closing the door as tightly as possible. The gas is rapidly formed and moistened, and penetrates everything in the room. Wait eight or ten hours, then open up the doors and windows, take the bedding, clothing, etc., to the open air and hang upon lines, to remain there at least forty-eight hours, after which beat them and wash them. As to the room, scrub the floor, wood work and all paint, with hot soap suds; whitewash walls and ceilings with caustic lime; remove the windows, open the blinds and let the room air until thoroughly dried and odorless.

The disinfectants here advised are:

First—Abundant and pure air, water and sunlight. These are abundant and ready for use out of doors. They are the most powerful preventatives of disease, and destroyers of disease virus we have, but they take too much time for use alone here.

Second—By burning sulphur over hot water, as directed in page 5.

Third—By the use of a saturated solution of green vitriol in water, as herein directed.

Fourth — By the use of zinc chloride solution. It may be cheaply made in the following proportions: White vitriol (zinc sulphate), 4 ounces; common salt, 2 ounces; water, 1 gallon.

Fifth — Liquor soda chlorinata, Labarraque's solution.

Sixth — Hot air (moist or dry) and temperature 212° to 240° F., is the best artificial disinfectant when it can be obtained, but requires for this purpose a special apparatus, and is, therefore, not ordinarily available.

WHY AND HOW PHYSICIANS MAY AND OUGHT TO AID STATE AND LOCAL BOARDS OF HEALTH.—A REPORT MADE TO THE STATE MEDICAL SOCIETY OF MINNESOTA BY THE SECRETARY STATE BOARD OF HEALTH.

RED WING, MINN., April 6, 1883.

Dr. J. C. Rosser, Chairman Committee on Epidemics, Hygiene, etc., State Medical Society,

DEAR DOCTOR: Your circular and letter inclosing same, just at hand. In reply you expect me to give you such suggestions as grow out of my long official service in State medicine. I will not, therefore, discuss the "germ" or any other "theory" of disease cause; but will give you a few of the facts as to the extent of the preventable disease mortality in our State.

One of the two most disgraceful records is that of diphtheria. It began to figure as a death cause in 1872, and the annual record of deaths since is as follows:

1872	42
1873	236
1875	226
1876	379
1877	370
1878	658
1879	951
1881	1,397

12.12 per cent of total deaths — double that of any death cause except consumption, which was 10.34 per cent of total. Over fifty-four per cent of deaths from diphtheria were under five years of age; over ninety-two per cent under fifteen. Over sixty-two per cent of deaths from diphtheria were of foreign parentage.

The State Board of Health have, for the last eight years, earnestly striven to persuade medical men to unite with the board in impressing upon the people that this disease is *very infectious*, and that it can be best controlled by strict seclusion of the sick and careful disinfection.

We succeeded, with the aid of a few earnest local health officers, in securing the indorsement of the State Medical Society at the Albert Lea meeting three years ago, and the popular opinion is constantly growing in this direction.

The profession are very negligent in their duty, and careless exposure and public funerals are still the rule. I beg your committee to report in the strongest terms on this subject and urge medical men to earnest and united action. Seclusion of the sick, prompt notification of the disease, and very careful disinfection offer the best protection we can at present have against this veritable plague.

Under the new sanitary code the power of local boards of health and of health officers is abundant, and they and the physicians who will help them may rely upon the prompt and constant co-operation of the State Board of Health.

The next record to which I wish to call earnest attention is the following:

In 1881, 1,273 children died of still-birth, premature birth and infantile debility, which fact means that 4.4 per cent of all born are born prematurely or die soon after birth.

Over 11 per cent of all deaths in Minnesota are of this class.

In Massachusetts in five years, 5.53 per cent of total deaths are of this class, just half our rate.

Now take typhoid fever, to which your circular specially refers. The record by years is as follows:

1872	315
1873	326
1875	216
1876	250
1877	255
1878	169
1879	297
1881	711

In 1881, therefore, this disease caused 6.17 per cent of total death, of whom more than 51 per cent were between the ages of 15 and 30 years; more than 61 per cent were between the ages of 15 and 50, and only 24 per cent under 15 years of age. More than 64 per cent had both parents foreign, and more than 25 per cent had both parents American.

Compared with the other records—*they* kill the children; *this* takes its victims from the "self-supporting class."

There is more of this kind of facts behind, but this exhibit is enough for my present purpose. Remember that these causes of death are of the preventable class; that they can be reduced far below their present position on the list of death causes, by means already known and whose use is provided for, in the knowledge and power of physicians, boards of health and intelligent parents, and what excuse have we to offer for the neglect to use, and enforce the use of, those means by every instrumentality in our power?

As to the first classes causing death in infancy and early childhood, I wish to call the attention of medical men to the demonstration which these and other statistics give:

First—Of a very powerful evil influence to be found in ante-natal conditions.

Second—(and next in importance probably)—Causes to be found in the care of mother and child during the first weeks after confinement.

Third—That the most important, because most effective, death causes are to be found in the conditions of the house, which is the home, and in the modes of life and work and worry of the mother, mental and physical, during pregnancy and in child-bed.

There is no necessity for the "refined methods" of modern scientific research, but rather for a clear, calm study of easily discovered facts, most of which are at hand, others to be gotten by careful inquiry and scientific sifting of other so-called facts. The microscope and the physical and chemical laboratory are of use, and often essential, but they come in long after practical and immediately available means of staying the slaughter have been discovered, or demonstrated anew, for that is a very common result of such investigation, thanks to faithful work done before.

A perfectly practicable plan would be the study of limited areas of territory by several physicians working in concert. Let one study drainage, ventilation and food supply. Another, the influences bearing upon the mental and physical condition of the mother during and after pregnancy.

Another, the facts of still-birth, premature birth and early infantile debility.

Another, the meteorological conditions and their relations.

At such intervals of time as may be agreed on, come together, compare notes and discuss progress made, and the literature of the subject.

I can suggest no field of practical work which offers a richer reward to the faithful worker than this, both in reputation and good works.

Resolutions and committees, as usually made up, rarely effect anything. The work needs zeal, intelligence, knowledge of what has heretofore been done, and a careful and persistent search for proximate causes first. The remedy of the disease must be the outgrowth of such work; its prevention can begin very early in the search.

Take for instance typhoid fever; do I exaggerate when I claim that the single sanitary act of disinfecting the intestinal discharges of its victims would reduce the number of its victims sixty per cent? I am sure I do not; and see what an easy and simple thing that act is?

As to qualifications of local health officers, we need:

First — Thoroughly educated men, physicians, who have had at least three years' active practice, and who will make a special study of hygiene as related to public use.

Second — That they be the executive officers of local boards of health. Their compensation can now be regulated by the board appointing them and their duties are clearly defined in the law.

Third — That they clearly understand that their work is largely missionary, and that upon themselves depend to a great extent the character which their work shall have, and upon its judicious selection and execution will depend the support to be given it by physicians and by the people.

Yours,

CHARLES N. HEWITT.

HOW TO TEACH HYGIENE IN PUBLIC SCHOOLS.

By the Secretary.

The following paper summarizes the argument for more hearty co-operation by teachers in the efforts now being made by State and local boards of health, for better instructions in hygiene in our common schools.

I submit the following as a simple and easily executed plan for such co-operation:

First—Insist that the study of *practical* hygiene be made an obligatory part of instruction in Normal schools and teachers' institutes. I emphasize the much abused word, practical, because it is essential that this teaching should be chiefly such as is available for every day use, its value being, that it is *just that thing*. The theory of hygiene, like that of any other art, is easier to teach and apparently more complete and systematic, and so, *to the teacher*, more satisfactory work, but not to the pupil of the grade here provided for.

Second—Whenever possible, this instruction for teachers, should be given by health officers, *i. e.*, by physicians who are actually in the practical performance of their duties, and so, from familiar use, capable of teaching and illustrating the principles of hygiene as an art from their own experience, in a way and with an effect not to be learned otherwise. In their absence there are now many physicians who are capable of doing the same thing.

There is so much misapprehension as to what the basis facts of practical hygiene are, that a brief statement for our present purpose will help to explain and justify the little plan I have to propose.

First—Health is the normal state of man.

Second—Ill health, sickness and premature death are the penalties paid for a violation of natural laws, which, as they relate to health, are sanitary laws.

Third—A knowledge of many of the most important of these laws is practicable for the majority of civilized people, and therefore, their violation is, in proportion to civilization, inexcusable.

Fourth—The nearest approach to the natural life possible, for every one, is the end of hygiene, and such a life consists in unconscious or intelligent obedience to natural laws.

Fifth—The obstacles thereto, outside personal ignorance, carelessness or deliberate neglect are the frequent powerlessness of the individuals against the influence of cause of ill health, induced by the unhealthy life or act of other men, whether in family, community or State.

Sixth—The elementary physical conditions of approximate healthy living are,

The possession and free use of

(*a.*) Abundant pure *air.*

(*b.*) Abundant pure *water.*

(*c.*) Abundant *light.*

(*d.*) Enough and properly prepared *food.*

(*e.*) Proper and sufficient *clothing*, including, under that head, shelter and bed as well as body wear.

(*f.*) Opportunity for the natural development of body and mind to maturity under above conditions—true education.

(*g.*) Opportunity also for regular self-sustaining work; for play; for rest and for sleep.

The use of all these things healthfully, depending as they do upon association in home, community, State and nation, with other people, involves and is a means of education of mind and morals too. So that healthfulness in our civilization is the outcome of the performance of duty, in all relations of living and doing.

The conditions of healthy living are so, first physical, then moral, religious and social, whether in the individual life or in that of the family, the social unit or of the community or the State.

Hence come the familiar subdivision of hygiene into personal, family, municipal, State and national.

The units of hygiene are the individual first, and the family next. These two are in intimate natural relation and inseparable, so it is important to insist that personal and family hygiene are taught together as making up that of the home, the centre of all healthy life.

And it is important that these lives should be studied *first* as one of relation to air, water, clothing, sunlight, etc.

But as the average health is far below the normal standard, (this last the exception and not the rule,) you cannot avoid, and would not if you could, the discovery by the average scholar of this average failure to be healthy. Such a discovery is just what is needed to give point and *personal* interest to the further question: Why all this suffering, misery and premature death?

Hence comes, perforce and naturally, the explanation of what *disease* is and how and why it destroys pleasure, usefulness, and even life.

Fortunately, many of the most important of these causes are easily demonstrable and bring one easily to the discussion of what we call *bad* air, *bad* water, *bad* food, etc.

And so for the instruction here proposed (thanks to the demonstration of modern hygiene) it is not necessary to consider any *law* or *fact in the abstract*, no need to go beyond the concrete and demonstrable fact, so that within the easy comprehension of an intelligent child most of the basis truths of personal and family hygiene can be clearly and impressively taught so as to become springs of intelligent action for such child, growing and strengthening with his growth.

Only we, who have to contend daily, not merely with preventable disease, but (what is often harder and always more discouraging), with prejudice and ignorance, can properly appreciate what a gain such knowledge would be to the well being and well doing of the people.

For the present purpose the instruction here proposed should be for teachers, to enable them to work out for their pupils with such means as the common school affords, demonstration of such facts as the following:

First—*Air.* Composition, difference between that of the open and the house; moisture of, and its simple relations. Peculiarities of inspired and expired air. Dust and poisons in air. Its simpler relations to disease and the detection of simple impurities.

Second—*Water.* Spring and well; river and cistern. Ordinary physical characteristics and simple chemistry. Pure and impure. Physical and other easily understood differences and how to detect them.

Third—*Foods.* Vegetable and animal. Prepared foods. Sugars, syrups, condiments. Simpler tests of. Bread, good and bad.

Fourth—*Clothing.* Woolen, cotton, linen, silk. Use of, and why. House as a cover. Bed as a cover.

Fifth—*Work and play.* Illustrated by common examples. Variety of work and recreation.

Sixth—*Rest and sleep.* Why? Describe and illustrate.

Seventh—*Disease.* Contagious and non-contagious. Illustrate by examples. Describe vaccine and vaccination and reason for. Prevention of disease by isolation of sick and disinfection of clothing, etc.

Eighth—*Disinfection.* Natural methods. By exposure to air. Burial in earth or water. Artificial methods. Use of green vitriol (ferric sulphate), lime, etc.

Ninth—*Personal hygiene.* Regularity of function and work. Physical and mental strain; moral, too, for that matter Cleanliness of person, clothing and habits. Play and sleep and hygiene of the sleeping room.

All this can be easily taught to teachers, not only by *precept*, but by example and practical illustration, and they can and should be drilled in the conveying the same to pupils; availing themselves of the daily events in the school, odors, water supply, heating, ventilating, sickness, or accident, to fix a little lesson in the surest way.

This, too, without text-book or *apparent* method, or special hour and lesson, but by a ready acceptance of the abundant opportunities to teach individuals as well as the school how they may escape many a pain or ache or the loss of a pleasure or a holiday.

But beyond this gain, valuable as it would be, see what would be the outcome of such work in the thousands of earnest and interested teachers, hearty co-workers in hygiene, educating *themselves* as well as their scholars, and so becoming practical sanitary workers in multitudes of homes.

And when pestilence or other disease comes, the health officer finds them there, forewarned and so forearmed and prepared to prevent its attack, ready and intelligent co-operators with him and increasing many times the chances of the success of their own and his work.

I would use no text-book except in the high school and that should be a skeleton around which the pupils might be encouraged and taught to build their previous knowledge, with some additions, into a living and practical whole, something to carry with them into active, independent life, as a ready helper, one of the most valuable aids to "success in life," I venture to believe, that their school training has given them.

When will the trial of so simple a plan be made in Minnesota?

College instruction in hygiene, I may add, should be more advanced, using a text-book under the personal direction of a working health officer, and covering the elements, in addition, of public hygiene and the administration of municipal and State laws.

If the proper authorities will take measures to secure the elementary, practical education of teachers for the common schools, as here suggested, including the hygiene of the individual and the family, I venture to promise you the aid of health officers for their part of the work, and that State and local boards of health will make such arrangements for testing the practical character of the instruction as shall increase its value, and by appropriate certificate, or other reward, stimulate the ambition of teachers to excel.

It's self-evident necessity; the simplicity of the means proposed; their directness and concentration, and the easy demonstration of their value, are my excuse for putting before the association this proposed work, than which, in education, none are more important, and for which the association's influence and effort can do so much to secure success.

CHARLES N. HEWITT.

DETAILED STATEMENT OF THE DUTIES OF A HEALTH OFFICER.—A LETTER OF DATE OF JUNE 12, 1883, TO A HEALTH OFFICER, FROM SECRETARY OF THIS BOARD.

My own experience as executive of this board, and knowledge of the difficulties local health officers have had to contend with during these twelve years, enable me to write with a full appreciation of your position, and if you will excuse the *didactic* form of my letter, it will enable me better to write what I want to tell you.

First—You do not write what your knowledge or study in public health is, and I, therefore, assume that you have not made it an especial study. Let me advise you (if you have not already done so) to buy the *last edition* of Wilson's Handbook of Hygiene and Sanitary Science, published by Blakeston, Philadelphia. After reading all the works in our language, this is the best resume for every day reference. It will enable you to answer many a question intelligently and clearly. When any question arises beyond this, you may refer it to me and I will loan you from our library all the current literature about it, which you need, and that is the best way to begin to study hygiene.

Second—Read up fully the ordinances of your city as to health, in four ways:

1. As to *your* duty.
2. The powers and duty of the local board of health.
3. The duty of your subordinates, health inspectors, etc.
4. The duty of the citizens of your city, as defined by city ordinance.

Third—Read up the new State law, chapter 132, Laws of 1883, which I send you, and the Revised Statutes, which are still law, unless repealed by the last act.

Fourth—Make your *first* duty, after knowing the law, city and State, to enforce it. Here is room for plenty of tact and quiet and steady work. My experience is, that persuasion by one who has power to enforce, is often more effective than legal measures; but it must be always understood that when you ask compliance with law, neglect to obey will be *surely* met by penalty, after reasonable waiting. If you begin in this way, courteous and patient, but *firm* when duty must be done, you will be safe.

Fifth—Keep your inspectors in close pursuit of *nuisances*, and deal promptly with them. The people expect and will applaud that, and filth is, besides, often the best guide to the locality of obstinate typhoid fever or eruptive diseases.

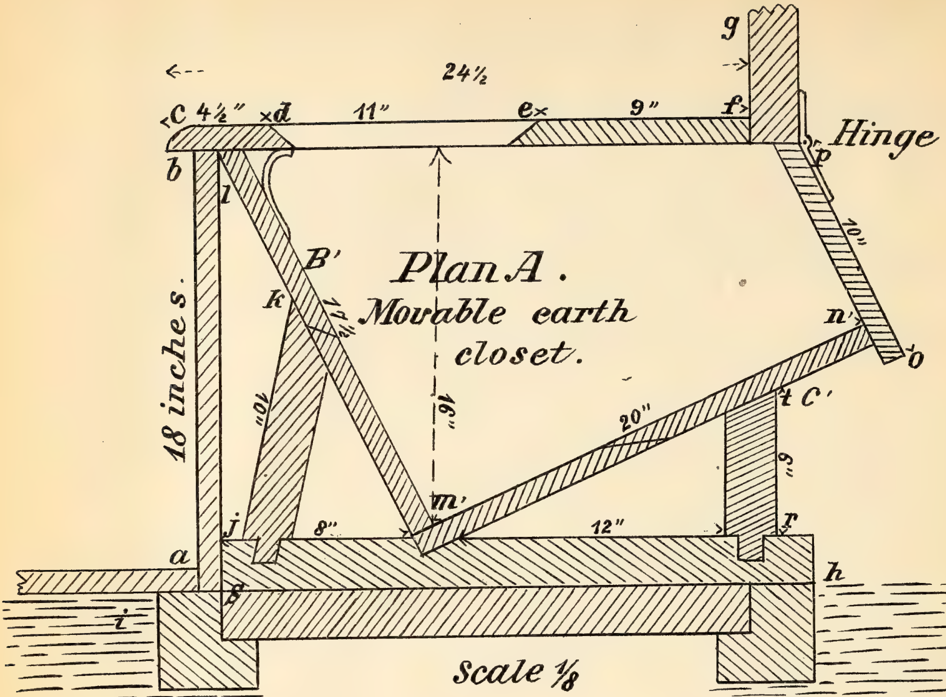
Sixth—Require prompt notice of infectious diseases from physicians and householders. Sections 21 and 22, chapter 132, Laws 1883.

Seventh—In enforcing quarantine insist that everything is done with all proper regard for people's feelings and *prejudices, too*, when you can; *for it pays* in all senses, but implies no lack of efficient work, nor should it be permitted to do so.

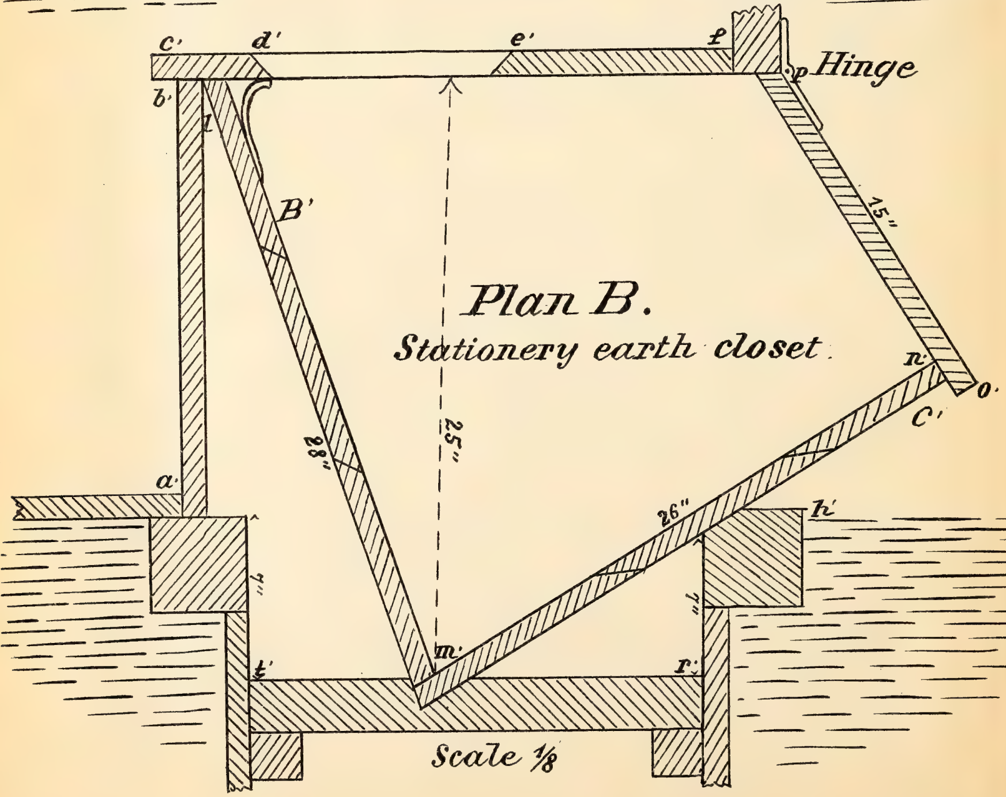
Eighth—Begin a systematic survey of the city from a sanitary *standpoint*. It would take more time than I can spare to describe what I would suggest in writing. Perhaps I may see you, and then I can do it quickly. This much I will write: It should include—1st, A study of water supply and sewage disposal of every block in the city.

I may add as respects typhoid fever, about which there is difference of opinion—but rather among physicians than health officers—the following note:

In your sanitary work the present state of our knowledge justifies you in assuming, 1st, That the disease is infectious through the discharges from the sick. Entrance of the poison into the body, via air, water and milk are practically proven probably



Plan A.
Movable earth closet.



Plan B.
Stationery earth closet.

in any way in which its peculiar poison can get access to a susceptible person. Therefore you are justified in demanding notice of the existence of cases of the disease from physicians, and in taking such measures as will prevent the spread of the poison, as above. I inclose to you our circular on typhoid fever, as a fair resuming of the latest and most reliable evidence. Carry out that circular in a quiet and persistent way and this board will sustain you. Where disinfection of the discharge is regularly done, as directed in the circular, you have the main danger in control.

Always look to the *water supply* and *water closet* and privy facilities in homes where these cases occur, and insist upon thorough disinfection and "cleansing."

Where more than one case occurs, I should quarantine the house, *and from all boarding houses* I should remove the patient to hospital, if it can be done without danger to him. Our experience is that it is from boarding houses that the disease spreads. In all cases isolate the patient as far as possible and disinfect the discharges *in the vessel used*, with Ferri sulphate.

You see, doctor, that to do your duty you have study enough, and work enough, for your whole time, for a good while to come. It is no child's play, or *man's* either, this official sanitary work by an executive officer. Excuse my plain writing upon the subject. It is just what I should have been thankful for, when I began years ago, and in the same spirit I offer it to you. Write me freely at any time and rely upon the co-operation of this board and myself in all faithful effort to do your duty.

DRY-EARTH CLOSET.

The accompanying sketch represent sections—end view—of two styles of dry-earth closet.

Plan A. Movable earth closet; a, b, c, d, e, f, g, h, i, is the outline of an ordinary closet; B C is the section of the closet; l m is eighteen inches; m n is twenty-one inches; o p is a door, swinging around hinge p and fastening against outer wall of privy while the box is being drawn out or the contents removed; j m is eight inches; m r, sixteen inches; j r, twenty-four inches; r t, six inches; this makes a box of available depth of about twelve inches; its contents can be removed either by drawing out the entire box, B C, or by shoveling out its contents through opening o p.

Plan B. Stationary dry earth closet.

The dimensions of the closet are the same as in the previous plan.

The change consists in making the closet B′ C′ deeper than B C by lowering point m′, seven inches below the top of the sills i′ and h′; l′ m′ is twenty-eight inches; m′ n′, twenty-six inches; o p, fifteen inches; s′ r′, nineteen inches; s′ m′, nine inches; m′ r′, eleven inches.

In this case the contents can only be removed by shoveling out through opening o′ p′. The available depth is about twenty inches, and the capacity of the dry earth box is therefore considerably increased.

In both the box should extend full length of privy seat. The joints should be made perfectly water tight, so that there can be no leakage, and the interior of each box should be saturated with coal tar paint, which when it dries offers a smooth resinous surface which is not affected by the contents.

A box of dry garden earth or mould with a can or cup for dipping up, should be kept constantly on hand in the closet, and sufficient amount thrown upon each deposit of excreta to absorb all moisture.

Cost of whole thing on either plan not over $5 or $6.

APPENDIX

TABLES

BELONGING TO

REPORTS ON KEROSENE,

Pages 366 to 376, inclusive.

TABLE I.

DATA OF BURNING OILS, EOCENE, WATER WHITE AND PRIME WHITE HEAD LIGHT, WITH FLETCHER AND WOODBERRY WICKS. TEMPERATURE IN DEGREES F.

NAME OF LAMP.	OIL.					
	Name of	Amount of	Sp. gr. at of 60°	Flash of	Burning point of	Precip. of Para. at
A C No. III.	EOCENE. —— Label C.	355 cc, or 12 *f* oz.	.782 at 75° .791 at 60° (estimated)	115°	135°	No precip. at 0°
D No. IV. B	PRIME WHITE HEAD LIGHT. —— Label D.	355 cc, or 8 *f* oz.	.803 at 76° .813 at 60° (estimated)	115°	140°	20
E No II. C	WATER WHITE Minnesota test. —— Label E.	355 cc, or 12 *f* oz.	.790 at 71° .794 at 60°	122	148	No precip. at 1°
Dn No. I D	PRIME WHITE HEAD LIGHT.	400 cc put in lamp. Burned 245 cc, or 8⅓ *f* oz.	.813			20
Ca No. III. E	EOCENE. —— Label C.	355 cc, or 12 *f* oz.	.782 at 75° .791	115	135°	None at 0°
Ea No. II. F	WATER WHITE Minnesota test. —— Label E.	355 cc, or 12 *f* oz.	.794	122°	148	None at 1°
Fa No. IV. G	PRIME WHITE HEAD LIGHT. —— Label F.	355 cc, or 12 *f* oz.	.805 at 71° .811 at 60°	117°	144	18°
Fb No. IV. H	PRIME WHITE HEAD LIGHT. —— Label F.	355 cc, or 12 *f* oz.	.811	.117°	144	18°

TABLE I—*Continued.*

WICK—1 inch for No. 2 burner.						
Name of	Weight of in grams.	Length of in inches.		First hour.	Second hour.	Third hour.
Fletcher.	3.516	7½"	Size of flame	Full	Full.	Full.
			No. of cinders	None.	None.	None.
			Odor	Slight, pleasant.	Slight.	Slight
			Temperature			115°
			Temp. of room.	75°		75°
			Length of draft.	3⅜"		
Fletcher.	3.488	7⅝	Size of flame	Full.	Full.	Full.
			No. of cinders	1	None	None.
			Odor	Slight, pleasant.	Slight.	Slight.
			Temperature			
			Temp. of room	75°		
			Length of draft	3⅜"		
Fletcher.	3.525	7½	Size of flame		Full.	Full and regular
			No. of Cinders		None.	None.
			Odor		None.	None.
			Temperature		130	133 to 136
			Temp. of room	77°	77°	(77)
			Length of draft	3⅜"		
Fletcher.	3.506	7½	Size of flame			
			No. of cinders			
			Odor			
			Temperature	116		
			Temp. of room	72		
			Length of draft			
Woodberry.	3.520		Size of flame	Full.		Full.
			No. of cinders			None.
			Odor			
			Temperature			
			Temp. of room			70°
			Length of Draft	3⅜"		
Woodberry.	3.586		Size of flame	Full.		Full.
			No. of cinders			None.
			Odor			
			Temperature			
			Temp. of room.			70°
			Length of draft	3⅜"		
Woodberry.	3.551		Size of flame	Full.		Full.
			No. of cinders			1
			Odor			
			Temperature			Trimmed 1–16"
			Temp. of room.			70°
			Length of draft.	3⅜"		
Fletcher.	3.522	7⅝	Size of flame	Full.	Full but irreg.	Full and sl'y ir.
			No. of cinders	1	2	1
			Odor			slight.
			Temperature	134	146°	140
			Temp. of room	73°		
			Length of draft	3⅜"		

TABLE I—*Continued.*

Fourth hour.	Fifth hour.	Sixth hour.	Seventh hour.	Eighth hour.	Ninth hour.
Full. None. ...... 113 75°	Full. None. Slight. 118° (77)	Full. None. ...... 119° (77)	Nearly full. None. Distinct, pleas't 120° (77)	Slightly reduc'd None. Distinct, sweet. 120° 79	Small. None. Distinct, pleas't. 116° 71 4⅞ approx.
Full. None. 77	V'y sli'tly redu. 1 Slight.	Full. 1	Slightly reduc'd Several. Distinct.	Slightly reduc'd Several. Slight, inoff'ive. .... Trim'd 1/8″	Small. 1 Distinct, inoff'e 122 71 4⅝ approx.
Full and regular None. None. 132 to 128	V'y sli'ly redu'd None. Slight. 130 70°	Full. None. Distinct. 131 76 to 80	Full. 1, small. ...... 140° 80°	Full. None. Slight. 138 77°	Reduced. 2 ...... 134 to 148. 78° 5″ approx.
.... 129	.... 87	...... Few. ...... 136°	Nearly full. None. 125	END 6.30	
Full. None. Slight, pleasant.	Full. None. None.	Full. None. None. ...... 83° ...... Trim'd 1-32″	Full. None. Slight, sweet. ...... 83°	Full. None. Slight, Sweet. .... 5⅛″	END 7hrs 55m.
Full. None. Slight, pleasant.	Full. None. None.	Full. None. None. ...... 83° ...... Trim'd 2-32″	Full. None. Slight, sweet. ...... 83°	Full. None. Slight.	Full. None. Slight. .... 5⅛″
Full. None. Slight. 124 to 126° (70)	Full. None. None. 132	Full. None. None. 124° 83 ...... Trimmed 1-16″	Full. None. Slight. 135° 83	Full. None. Slight. 136°	Decreasing. 2 ...... 144° ...... 4⅞″ approx.
Full and sl'y ir. 1 ...... 134 to 145° 87°	Full. 2 ...... 136 87	....	Some reduced. 3 ...... 145	Some reduced. 2 ...... 156 84	Small and irreg. Numerous. Strong. 170° ...... 4⅝″ approx.

TABLE I—*Continued.*

Tenth hour.	Eleventh hour.	Twelfth hour.	Weight of wet wick, in grams.	Weigth of oil in wick, in grams.	Weight of heavy oils, after 3½ hrs. evap, in grams.)
Small. None. 124° 5⅛	END 9.19		7.144	3.517	.462 (13.1 per ct. of weight of oil from wick.)
Small and irreg. 2 Distinct. 136° to 142° 75	Small and irreg. Numerous. Distinct. 150 to 152 75 5⅛″	END 11.02m.	7.919	4.338	2.356 54.3 per cent of wt. of oil from wick.
Small and irreg. Numerous. Strong. 160 to 170° 5⅛″	END 9.43		7.540	4.253	1.193 28 per cent.
			9.195	5.354	0.913 17.0 per cent.
END 8hrs. 50m.			9.515	5.993	1.703 28.4 per cent.
Reduced. 1 Slight. 142 83° 5⅜	END 9hrs 30m.		9.739	6.302	3.208 50.9 per cent.
Small and irreg. Numerous. Strong and off. 162 to 165. 4⅞ to 5″	V'y small irreg. Numerous. Offensive. 176° (84) 5⅛″	END 10hrs.510m.	9.213	5.577	2.635 47.4 per cent.

TABLE I—*Continued.*

Condition of lamp and burner.	Total time burning.	Time required to burn 1 gal. at same rate	Greatest heat. Lowest heat. Av. temp. Av. tem. of room	Hour when flame began decreasing.	Hour during which flame became *small.*
Char. ¼" Cinders, none. burner not crusted.	9 hours 19 minutes.	99 hours 23 minutes.	124° 113° Ave.temp. 118° Ave. temp. room 75°	Eight.	Ninth.
Char. ⅜" Cinders, many. Burner much crusted.	11 hours, 2 minutes.	117 hours 42 minutes.	152° 122° Av. temp. 140. Av. temp. room 75°	Seventh.	Ninth.
Char. ⅜" Cinders, many. Burner crusted.	9 hours 43 minutes.	103 hours 39 minutes.	170° 128 Av. temp. 140 Av. temp. room 78°	Ninth.	Tenth.
	6 hours 30 minutes.	99 hours. 50 minutes.	136° 116° Av. temp. room 74°	Seventh.	
Char. 3–16. Cinders, none. Burner not crusted.	7 hours 55 minutes.	84 hours 27 minutes.	Av. temp. room 78°	Full to end.	
Char. 3–16" Cinders, none. Burner not crusted.	8 hours 50 minutes.	94 hours 13 minutes.		Full to end.	
Char. 3–16" Cinders. Burner slightly crusted.	9 hours 30 minutes.	101 hours 33 minutes.	144° 124° Av. 134° Av. temp. room 81°	Ninth.	
Char. ⅜" Cinders, many. Burner much crusted.	10 hours 15 minutes.	109 hours 33 minutes.	176 134° Ave. 151° Av. temp. room 84°	Sixth.	Ninth.

TABLE I—*Concluded.*

Per cent of Heavy oils in each oil left after 3½ hours evap.	Candle power.	Candle power.	Draft at which flame failed.
In oil c 15.6 per cent.	6.12 draft 4½ in.	8.66 draft 3⅜″	4¾ inches to 5⅛ inches.
			4⅜ inches. to 4⅝ inches.
In oil E 22.5 per cent.	5.99 Draft 4¼ in.	8.15 Draft 3⅜ in.	5 inches to 5⅛ inches.
In oil C 15.6 per cent.	11.84 Dft 2½ to 3¾ in. hour 2d. 11.80 Draft 4⅜ in. hour 6th		Not at all; full at 5⅛ inches.
In oil E 22.5 per cent.	10.51 Draft 3⅝ in. hour 2d 11.93 Draft 4⅜ in. hour 6th		Full at 5⅛ inches.
In oil F 49.4 per cent.	14.33 (?) Draft 3⅝ in. hour 2nd. 9.27 Draft 4¼ in. hour 6th		4 ⅞ inches to 5⅛ inches.
In oil F 49.4 per cent.	4.08 Draft 4¼ in. 9.45 Draft 4⅛ in. hour 6th.	10.24 Draft 3⅜ in.	4⅜ inches to 4⅝ inches.

TABLE III.

TEMPERATURE FARENHEIT.

NAME OF LAMP.	OIL.						WICK.		
	Name of.	Amount of.	Specific Gravity of at 60°	Flash of.	Burning Point of	Precip. of Paraffine.	Name of	Weight of. Grams.	Length of.
B. No. I.	Prime White Head Light, Label B.	945 cc, or 32 *f* oz.	.8065 at 65° .810 (estimated.)	115°	142°	16°	Fletcher.	3.447	7½″
B No. II.	Prime White Head Light, Label B.	709 cc, or 24 *f* oz.	.8065 at 65° .810 (estimated.)	115°	142°	16°	Fletcher.	3.440	7 9-16″
B No. III.	Prime White Head Light, Label B.	473 cc, or 16 *f* oz.	.8065 at 65° .810 (estimated.)	115°	142°	16°	Fletcher.	3.457	7½″
B No. IV.	Prime White Head Light, Label B.	236.5 cc, or 8 *f* oz.	.8065 at 65° .810 (estimated.)	115°	142°	16°	Fletcher.	3.450	7½″

TABLE III.—*Continued*

	First Hour.	Second Hour.	Third Hour.	Fourth Hour.	Fifth Hour.
Size of Flame	Full	Full	Decreasing	Irregular	Small
Number of cinders		Two small Trimmed ¼″	Few	4	Trimmed ¼″
Odor		None	Slight		
Temperature					
Temperature of room.	68°	75°			75°
Length of Draft	3¾″				4½″
Size of flame	Full	Full	Decreasing	Irregular	Small
Number of cinders		Two small Trimmed ¼″	Few	2	Trimmed ⅜″
Odor		None	Slight		
Temperature					168°
Temperature of room.	68°	75°	75°	75°	75°
Length of draft	3¾″				4½″
Size of flame	Full	Full	Decreasing	Very poor	Half ord
Number of cinders		Four m'dm Trimmed ¼″	Several	Four large. Trimmed ¼″	Trimmed ¼″
Odor		Slight	Distinct		Slight
Temperature					
Temperature of room.	68°	75°	75°	75°	64°
Length of draft	3¾″			4⅜″	4 7-16″
Size of flame	Full	Full	Decreasing	Slightly sm'l'r	Small
Number of cinders		Two small. Trimmed ¼″	Few	1	Trimmed 7-32″
Odor		None	Slight		
Temperature	68°	75°			
Temperature of room.					
Length of draft	3¾″				4 7-16″

TABLE III. — *Continued.*

Sixth Hour.	Seventh Hour.	Eighth Hour.	Ninth Hour.	Tenth Hour.
Half ord'ry size .... Slight,............. .... 64° 4⅝" Trimmed ¼"	Refilled. Full............... None.............. None............... 116° 67° 3 9-16"	Full and r'gl'r 1 Slight...........	Full and regular... None................... Very slight..........	Full & irregl'r Several.......... .... 4¼" Trimmed ¼"
Half ordinary .... Slight.............. 148° 64° 4⅝" Trimmed ¼"	Refilled. Full............... None.............. None.............. .... 67° 3⅝"	Full and r'gl'r 1 Slight............	Full & slightly irregular. 3 Slight...................	Full irregular. Several.......... .... 4¼" Trimmed ¼"
Refilled. Full................ None............... None............... .... 67° 3⅜"	Full...................... None .... Slight................... 118° 67°	Full and r'gl'r None .... Slight............ 118°	Full and irregular One small .... Slight.....................	Reduced irreg Several ...., ... 4¼" Trimmed ¼"
Half ordinary...... Several................ Slight................... 150° 64°	Small irregular Several large.... Strong of'nsive 173° 162° 67° 4¾" Trimmed 5-16"	Small ir'egul'r Numerous l'ge Strong........... 146° 162° 152° 170°	Very small and irregular. Numerous large... Strong................. 170° to 196° .... 5⅛"	End — 8 hours 15 minutes.

TABLE III.—*Continued.*

Eleventh Hour.			Twelfth Hour.	Thirteenth Hour.	Fourteenth Hour.	Fifteenth Hour.
Reduced irreg	Trimmed ¼″	Refilled.	Full, regular ..	Full, regular..	Full, regular ..	Full, regular ..
Several..........			None............	None	None	None ....
....			None	None	None	Slight............
....			....	....	....	....
....			64°	....	68°	....
4 7-16″			3⅜″	....	....	....
Reduced irreg	Trimmed ¼″	Refilled.	Full, regular ..	Full, regular ..	Full, regular...	Full, regular ..
Several..........			None............	None	None	None ....
....			None............	None	None	Slight...... .....
132° to 147°			115°	....	....	....
....			64°	....	68°	....
4⅜″			3⅜″	....	....	....
Half full, irregular				Small,ir'egul'r	Small, irregl'r	Small, irregl'r
2			Small, irregular ...	Numerous......	Numerous	Numerous......
Distinct...............			Numerous	Distinct.........	Strong...........	Strong & offen.
....			Distinct...............	133° to 143°	141°	140° to 152°
64°			138°	....	68°	....
....			64°	....	....	....

TABLE III.—*Continued.*

Sixteenth Hour.	Seventeenth Hour.		Eighteenth Hour.	Nineteenth Hour.	Twentieth Hour.
Full, regular..	Sl'gtly reduc'd	Trimmed ¼″ Refilled.	Full, r'gl'r	Full, regular...	Full, regular...
None	None		None	None	None ....
Slight	Slight............		None	Slight	None ....
....	....		....	....	....
....	....		64°	....	....
....	....		3⅜″	....	....
Full, regular..	Slightly reduced & ir'g.	Trimmed ¼″	Small	Small, irreg'lr	Small, irregl'r.
None	3		None...............	Several...........	Numerous .....
Slight............	....		....	Distinct.........	Strong...........
126°	139°		126° to 12°	138° to 153°	140° to 158°
(68°)	(68°)		64°	(64°)	(64°)
....	4⅜″		....	....	....
Very small & irregular	End—15 hours 9 min.				
Numerous......					
Strong & offen.					
152° to 164°					
....					
5⅛″					

TABLE III. — *Continued.*

Twenty-first Hour.	Twenty-second Hour.	Twenty-third Hour.	Twenty-fourth Hour.	Twenty-fifth Hour.
Full, regular...	Full, regular...	Slightly r'dc'd	Slightly r'dc'd	Reduced.........
None	None	1 Trimmed 3-16″	1	3
None	None	Slight............	None	Slight............
....	120°	126°	130°	134° to 144°
78°	(78°)	(78°)	....	....
....	....	4 3-16″	....	....
Small, irreg'lr.	Very small & irregular.	End — 21 hours, 35 min.		
Numerous	Numerous			
Strong, offen.	Strong & offen.			
138° to 161°	158° to 183°			
78°	(78°)			
....	5⅛″			

TABLE III. — *Continued.*

Twenty-sixth Hour.	Twenty-seventh Hour.	Twenty-eighth Hour.	Weight of Wet Wick.	Weight of Wick Washed.	Weight of Oil Washed out of Wick.	Weight of Oil from Trimmings.	Total Weight of Oils Washed out.
Reduced somewhat.	Small but regular.	Small and irregular.	End — 27 hours 29 min. 5.333 Grams.	2.767 Grams.	2.566 Grams.	.576 Grams.	3.145 Grams.
Several..........	2	Numerous					
Slight............	Distinct not offensive.	Distinct.........					
144° to 142°	140° to 145°	147° to 158°					
....	70°	....					
....	....	5⅛″					
			4.734 Grams.	2.620 Grams.	2.114 Grams.	.581 Grams.	2.695 Grams.
			5.051 Grams.	2.822 Grams.	2.229 Grams.	.386 Grams.	2.615 Grams.
			5.827 Grams.	3.040 Grams.	2.787 Grams.	.263 Grams.	3.050 Grams.

TABLE III. — *Coutinued.*

Weight of Heavy Oils after 3½ hrs. Evaporation.	Condition of Lamp after Burning.	Total Time Burning.	Time Required to burn 1 Gallon at the same rate.	Highest Temperature and Time.	Draft at which Flame Failed.
1.738 52.8% Grams.		27 hrs. 29 min.	109 hrs. 56 min.	158° in Twenty-eighth hour. Room 75°.	4¼ to 4½ inches.
(60%) 1.625 Grams.	Char ⅜″ Length wick, 5⅝″ Cinders — Great number. Burner crusted.	21 hrs. 35 min.	115 hrs. 7 min.	183° in Twnety-second hour. Room 78°.	4⅜ to 4½ inches.
(59%) 1.555 Grams.	Char ⅜″ Cinders — Great number. Length wick, 6″ Burner crusted.	15 hrs. 9 min.	121 hrs. 12 min.	164° in Sixteenth hour. Room 68°.	4¼ to 4⅜ inches.
(65.8%) 2.008 Grams.	Char ⅜″ Cinders numerous Length wick, 6⅜″ Burner crusted.	8 hrs. 15 min.	132 hrs.	196° in Eighth hour. Room 67°	4¼ to 4½ inches.

TABLE II.

Lamp.	Oil.					Name of Wick. (Width, 1 inch.)		First Hour.	Second Hour.	Third Hour.	Fourth Hour.	Fifth Hour.	Sixth Hour.	Seventh Hour.	Eighth Hour.	Ninth Hour.	Tenth Hour.	Eleventh Hour.		Condition of Lamp and Burner.	Total Time of Burning.	Time Required to Burn one Gallon at same Rate.	Greatest Heat, Lowest Heat, Average Temperature.	Draft at which Flame Failed.
	Name of.	Amount of.	Specific gravity of at 60°.	Flash of.	Precipitate of Paraffin.																			
C' n No. IV....	Eocene C'.	355 cc.	.790	....	44°.	Fletcher.	Flame	Full and regular.	Full and regular.	Full and regular.	Full and regular.	Full and regular.	Full and regular.	Nearly full and regular.	Medium and regular.	Medium and regular.	Med. to sm. and regular.	End 9 hrs. 15 min.		Char. ¼. Cinders, none. Burner not crusted.	9 hr. 15 min.	98 h. 40 m.	Greatest heat, 128°. Lowest heat, 118°. Mean heat, 122½°. Av. temp. of room, 71°.	Between 4¾ and 5⅛ inches.
	To which paraffin (solid) has been added.	or 12 *f* oz.	(789 specific gravity of oil C'.)				Cinders	....	None.	None.	None.	None.	None.	None.	None.	None.	None.							
							Odor	None.	Slight.	Distinct, pleasant.	Distinct, not offensive.	Distinct.	Distinct.	Distinct.	Distinct, not offensive.	Distinct, not offensive.	Distinct.							
							Temperature, degrees F	118.	126	119	121	124	128	126	121	122	120	Av 122½						
							Temperature of room...	67.	69	69	70	72	73	73	73	73	71	Av. 71						
							Draft, in inches........	3⅜.	....	....	....	....	....	4⅜ Trim'd 1-16.	....	....	5⅛							
C'. m No. III.	Eocene C'.	355 cc.	.790 or .789.	....	23°	Fletcher.	Flame	Full and regular.	Full and regular.	Full and regular.	Full and regular.	Full and regular.	Full and regular.	Nearly full and regular.	Full to med. and regular.	Full to med. and regular.	End 8 hr. 50 min.			Char. 3-16. Cinders, 1 or 2. Burner not crusted.	8 hr. 50 min.	94 hr. 13 m.	Greatest heat, 132°. Lowest heat, 120°. Mean heat, 126 2-7°. Av. temp. of room, 71°	5⅜. Did not entirely fail at all.
	To which solid paraffin has been added.	or 12 *f* oz.	.789 specific gravity of oil C'.				Cinders	None.	None.	None.	None.	2	1 small.	1 small.	None.	None.								
							Odor	Slight.	Slight.	Distinct, pleasant.	Distinct, not offensive.	Distinct.	Distinct.	Distinct.	Distinct, not offensive.	Distinct, not offensive.								
							Temperature, degrees F	....	....	120	120	130	126	124	132	132	Av. 126 2-7							
							Temperature of room...	67	69	69	72	73	73	73	73	72	Av. 71							
							Draft, in inches........	3⅜	....	....	....	....	....	4⅝ Trimmed ⅛.	....	5⅛								
C' o No. 2.	Mixture of— Eocene, 280 cc. "Zone" oil, 75	355 cc.	.812	122°	Small precipit'te at 0°	Woodberry.	Flame	Full and regular.	Full and regular.	Full and regular.	Full and regular.	Full and regular.	Nearly full and regular.	Med. to sm. and regular.	Small and regular.	Small and regular.	Small and regular.	Small and regular.	End 11 hr. 0 min.	Char. ¼. Cinders, few. Burner considerably crusted.	11 h. 0 m.	117 h. 20 m.	Greatest heat, 132°. Lowest heat, 111°. Mean heat, 121 3-10°. Av. temp. of room, 71°.	Between 4¼ and 4½ inches.
	355 cc.	or 12 *f* oz.		Burn 138°.			Cinders	None.	None.	None.	1 small.	None.	None.	None.	None.	None.	1 small.	3						
	Eocene (C'), specific gravity .789; "Zone" oil above .850.						Odor	Slight.	Distinct.	Distinct, not offensive.	Distinct.	Distinct.	Distinct.	Distinct, not offensive.	Strong.	Strong.	Strong.	Strong.						
							Temperature, degrees F	111	113	114	128	123	118	122	....	122	130	132	Av. 121 3-10.					
							Temperature of room...	68	69	71	74	73	73	73	....	70	70	66	Av. 71					
							Draft, in inches........	3⅜	....	....	....	....	4⅛ Trimmed ¼.	....	4½	....	....	5						

TABLE IV.

Temperature Farenheit.

Name of Lamp.	Oil.						Wick.																			
	Name of.	Amount of.	Specific Gravity of at 69°.	Flash of.	Burning.	Precipitate of Paraffine.	Name of.	Weight of. Grams.	Length of. Inches.		First Hour.	Second Hour.	Third Hour.	Fourth Hour.	Fifth Hour.	Sixth Hour.	Seventh Hour.	Eighth Hour.	Ninth Hour.	Tenth Hour.	Eleventh Hour.	Time Burned.	Time Required to Burn One Gallon at this Rate.	Weight of Wet Wick. Grams.	Heavy Oils Left after Four Weeks' Evaporation. wt. in grams	Length of Char.
Lamp No. I.	Water White. Minnesota Test. Presented by agent Standard Oil Co.	236.5 cc. or 8 f oz.	.786 at 69°.	113°	127°	Undetermined.	Fletcher.			Size of flame	....	....	....	....	....	Full.	Blown out.					6 h. 42 m.	107 h. 12 m.	9.6785	1.7111	
										Number of cinders	....	....	....	....	None.	None.										
										Odor	....	....	....	Slight.	....	None.										
										Temperature	110	....	....	116	120	....	120									
										Temperature of room	76	76	78	79	80	81	80									
										Length of draft	3¾"	....	....	....	....	....	5⅛"									
Lamp No. II.	Eocene. Presented by agent Standard Oil Co.	236.5 cc. or 8 f oz.	.783 at 69°.	117°	132°	No precipitate at 5°.	Fletcher.			Size of flame	....	....	....	....	....	Full.	Blown out.					6 h. 42 m.	107 h. 12 m.		.652	¼ inch. Burner crusted but little.
										Number of cinders	....	....	....	....	None.	None.										
										Odor	....	....	....	Slight.	....	None.										
										Temperature	118	....	....	119	....	125	124									
										Temperature of room	76	76	78	79	80	81	80									
										Length of draft	3¾"	....	....	....	....	....	5⅛"									
Lamp No. III.	Primo White. Presented by agent Standard Oil Co.	236.5 cc. or 8 f oz.	.802 at 69°.	112°	13 .°	No precipitate at 10°.	Fletcher.			Size of flame	....	Decreases.	....	....	....	....	....	....	Blown out.			8 h. 30 m.	136 hours.		2,045 After five hours' evaporation.	⅜ inch. Burner crusted more than previous case.
										Number of cinders	....	....	Few.	Three.	....	Several.	....	....								
										Odor	....	....	Offensive.	Offensive.	....	Strong and offensive	....	....								
										Temperature of brass on lamp	120	....	112	128	144	151	....	....	137							
										Temperature of room	76	76	78	79	80	81	80	....	77							
										Length of draft	3¾"	....	....	....	....	....	....	....	5⅛"							
Lamp No. IV.	Head Light. Presented by agent Standard Oil Co.	236.5 cc. or 8 f oz.	.803 at 69°.	112°	132°	32°	Fletcher.			Size of flame	....	....	....	....	....	Reduced.	....	....	....	....	Blown out.	10 h. 7 m.	161 h. 52 m.		2,993 After four hours' evaporation.	5-16 inch. Burner crusted more than in I. and II.
										Number of cinders	....	....	....	....	Four.	Several.	....	....	....	....						
										Odor	....	....	....	Pleasant(?).	....	Distinct, pleasant.	....	....	....	....						
										Temperature of brass on lamp	....	115	....	....	133	133	....	....	....	131						
										Temperature of room	76	76	78	79	80	81	80	....	77	75						
										Length of draft	3¾"	....	....	....	....	....	....	....	....	....	5⅛"					

TABLE V.

Temperature Farenheit.

Name of Lamp.	Oil.	Wick. Wt. in Grams.		First Hour.	Second Hour.	Third Hour.	Fourth Hour.	Fifth Hour.	Sixth Hour.	Seventh Hour.	Eighth Hour.		Condition of Lamp and Burner.	Total Time Burning.	Time Required to Burn One Gallon at Same Rate.	Highest Temperature. Degrees F.	Hour When Flame Began to Decrease.	Hour When First Cinders Appeared.	Length of Draft at which Refused to Burn Full Flame.	Candle Power.	Remarks.
F No. II.	Prime White Head Light.	Fletcher.	Size of flame	Small.	Small and irregular.	Very small, irregular.	Very small.	3 hours 5 minutes.					Char above tube, ½ in.; below tube, ¾ in.; total, 1¼ in. Cinders, many. Burner crusted.	3 h. 5 m.	145 h. 50 m.	185	First.	First.	4 inches.		This oil had received eight successive treatments with sulphuric acid, 2 per cent each treatment by volume. Amount put into lamp, 200 cc. Amount left in lamp, 122 Amount burned....... 78 cc.
	Label F	Weight, 3.470.	Number of cinders	Several.	Four.	Numerous.	Numerous.									(Room 85.)			Or less.		
	200 cc.	Length, 7½ in.	Odor		Offensive.	Offensive.	Smoking, offensive.														
			Temperature of brass on lamp			182															
			Temperature of room			85	87														
			Draft, inches	4		4⅝															
F^a No. III.	Prime White Head Light.	Woodberry.	Size of flame	Small.	Small, regular.	Small, irregular.	Small, irregular.	3 hours 10 minutes.					Char above wick tube, ⅜ in.; within wick tube, ¼ in.; total, ⅝ in. Cinders, several. Burner crusted.	3 h. 10 m.		160	First.	Second.	4 inches.		Same as last. Amount burned, 72 cc.
	Label F	Weight, 3.366.	Number of cinders	None.	Two.	Three.	Numerous.									(Room 87.)			Or less.		
	200 cc.	Length, 7⅝ in.	Odor		Offensive.	Offensive.	Offensive.														
			Temperature of brass on lamp			155	160														
			Temperature of room				87														
			Draft, inches	4		4⅜															
C No. I.	Eocene.	Fletcher.	Size of flame	Full and regular.	Full.	Full.	Full.	Slightly reduced, irreg	Reduced.	End 5 hours 5 minutes.			Char, ⅜ inch. Cinders, one. Burner but little crusted.	5 h. 5 m.	96 h. 11 m.	151	Fifth.	Fifth.	5 inches.	8.57	This oil had received five successive treatments with sulphuric acid, 2 per cent each treatment by volume.
	Label C	Weight, 3.540.	Number of cinders	None.	None.	None.	None.	One.	None.										Approx.	Draft 4⅜ in. 3d h.	
	200 cc.	Length, 7⅝ in.	Odor	None.	Slight.	Slight.															
			Temperature of brass on lamp		134	142		151	150												
			Temperature of room			87															
			Draft, inches	4					5⅛												
D No. I.	Prime White Head Light.	Fletcher.	Size of flame	Full.	Slightly reduced, irreg.	Full, irregular.	Slightly reduced, irreg.	Slightly reduced, irreg.	Very small, irregular.	Small, irregular.	Small, but regular.	End 7 hours 55 min.	Char trimmed off, ⅜ in.; remaining, ¼ in.; total, ⅝ in. Cinders, many. Burner crusted.	7 h. 55 m.	126 h. 14 m.	192	Fourth.	First.	4¼ inches.		This oil had received one treatment with sulphuric acid, 2 per cent by volume.
	Label D	Weight, 3.633.	Number of cinders	Two.	Few.	Several.	Two.	Many.	Numerous.	Numerous.	None.					(Room 80.)			Approx.		
	236.5 cc.	Length, 7⅝ in.	Odor			Slight.			Distinct.												
			Temperature of brass on lamp		154	160	156	174	174	170, 174, 192.	Trimmed. 132										
			Temperature of room		86			80	74		81										
			Draft, inches	3¾						4¾											

RULES AND REGULATIONS

OF THE

HIGH SCHOOL BOARD.

STATE OF MINNESOTA.

REVISED BY THE BOARD, 1885.

ST. PAUL, MINN.:
THE PIONEER PRESS COMPANY.
1885.

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This Manual for High Schools is published as a help to both teachers and scholars. It presents, in a clear and methodical way, good methods of teaching three leading branches of knowledge, — language, science, and mathematics. It contains also, for teachers and for pupils, special articles prepared by experienced instructors and containing much wholesome advice in the highest degree stimulating and instructive. It is not expected that under the guidance of the Manual either teachers or pupils will lose their individuality and all become alike in their methods of teaching and of studying, nor is it desired that they shall do so. But it is hoped that whatever tendencies to unwise methods in either teaching or studying now exist, may, by a wise use of the Manual, be corrected; and that the training in our High Schools may become more symmetrical than it has been heretofore, so that the scholars in different schools who have pursued the same studies will show a more equal degree of knowledge and of discipline than is possible when there is no uniformity in the objects sought or in the methods of teaching.

One of the most important things to be done in High Schools, if it has not been done in the schools of lower grade, is to teach the scholars *how to study.* This is far more difficult than merely to teach them. Much patient labor is often expended by pupils without any corresponding advantage, because they have not learned the *best way* of studying. Much time is wasted in study which is seeming rather than real. To be able to fix the attention on the work to be done and to keep it undiverted until the lesson is learned, is what every student should aim at.

Another very important matter is *method in teaching.* The teacher should have definite views as to what he desires his pupils to learn — what topics connected with each subject he desires especially to emphasize; and he should dwell upon the essential points, lesson after lesson, until his object is attained. If questions are asked and points explained only once, they will make little impression on the mind of the average pupil; but if these are repeated over and over again by constant reviews, a lasting impression will be made.

While encouraging pupils as far as possible by recognizing merit in all good work done, the teacher should keep the standard of excellence required higher than the attainments yet made, so that the thoroughness exhibited by the pupil in one recitation shall never become the standard for all future recitations. *Excelsior* is the proper motto.

The two greatest enemies to thorough scholarship with which our schools have to contend are, first, the desire to go over a great deal of ground in a little time, so as to get through with education as soon as possible; and, second, the desire to learn a little of everything even though nothing be learned thoroughly. Under the operation of these two desires, the acquisition of knowledge is made almost the only object, and the training of the mental faculties is lost sight of. Yet in life the pupil's success will depend mainly upon the degree in which he is master of his own mind and able to apply his whole attention to the subject which he proposes to investigate; while much of the knowledge acquired in the schools he may never have occasion to use. There is an important truth suggested by the saying of Thomas Hobbes, the philosopher of the seventeenth century, that, "if he had read as much as other men, he should have been as ignorant as they." Patience, a willingness to advance no faster than one can go with thoroughness, time for the mind to assimilate what it receives while it is kept hungry for more, a habit of earnest application while studying, — these, and not a hasty gorging with every possible subject that can be suggested as desirable to be known, are what the pupils need in order to derive the greatest good from the studies preparatory to the University or to active life.

MEMBERS, EX-OFFICIO, OF THE HIGH SCHOOL BOARD.

The Governor of the State,—

L. F. HUBBARD,

President.

The State Superintendent of Public Instruction,—

D. L. KIEHLE,

Secretary.

The President of the University,—

CYRUS NORTHROP,

Examiner.

CIRCULAR.

The High School Board desires, in explanation of the general plan and regulations devised for the care of the interests committed to the board under the law for the encouragement of higher education, to call attention to the design of the law and the conditions to its successful operation.

I. THE DESIGN.

The design of the law, as its title indicates, is to aid students in securing an education higher and more thorough than belongs to common and ordinary graded schools. The State is especially interested in fostering this grade of instruction, because of its intrinsic value in providing the basis in education for a more valuable citizenship, but especially because it is essential in rendering available to our youth the munificent provision made in the State University.

We have at our very doors an institution which offers to every young man and woman, without charge, a full course of University instruction, with a most ample provision of instructors, library, museum and apparatus. Yet all this is unavailable to the largest part of our youth, for two reasons. They have no opportunities for preparation, and not being able to span the gap between their present attainments and the standard for entrance, their prospect is hopeless. Besides, having never been led by competent teachers to appreciate their opportunities, their ambition for the highest culture and the best possible preparation for life has never been aroused. These invaluable results are contemplated in the enactment and operation of this law.

II. CONDITIONS TO SUCCESS.

It will be readily seen that the work called for can be done only by the best and most thoroughly qualified teachers in schools as thoroughly organized and managed. To secure this, and to guard the distribution of the fund appropriated for this purpose, it is necessary that the board maintain some supervision over the schools receiving it.

The plan adopted by the board, and expressed in these rules and regulations, in no way interferes with the general organization or management of the several schools. It simply insists upon certain features as absolutely essential, such as a qualified teacher, course of study and final written examinations. Beyond these, the local boards are at entire liberty to adopt their own plans, holding themselves and their schools responsible for satisfactory results as they shall appear in the final examinations.

The records of the board will show the names of all pupils in each school, the number of studies completed, with the standings reached, and the names of all students who have completed the entire course.

By resolution of the board of regents, work satisfactorily completed at the high school, is accredited as so much of the entrance examination to the University. The advantage and encouragement of this arrangement to students are very great.

These regulations, simple and few as they are, will seem quite complex to a novice, and schools suffering from frequent changes of teachers are likely to be embarrassed in observing them. It is therefore urged in the interest of the school and the law, that the best teachers be engaged at liberal salaries, and that they be retained as long as possible. It is also advised that the local boards make themselves familiar with the work of their schools, visit them frequently, attend the examinations, examine the reports and confer with the visitors of the board so far as duties will allow.

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I. STATUTES AND RESOLUTIONS.

Statute Approved March 3, 1881.

AN ACT FOR THE ENCOURAGEMENT OF HIGHER EDUCATION.

Be it enacted by the Legislature of the State of Minnesota:

SECTION 1. The governor, superintendent of public instruction, and the president of the university of Minnesota, *ex officio*, are hereby constituted a board of commissioners on preparatory schools for the encouragement of higher education in this State. This board shall be called the high school board, and shall perform the duties and shall have and exercise the powers hereinafter mentioned.

SEC. 2. Any public graded school in any city or incorporated village, or township organized into a district under the so-called township system, which school shall give preparatory instruction according to the terms and provisions of this act, and shall admit students of either sex from any part of the State without charge for tuition, shall be entitled to receive pecuniary aid as hereinafter specified. *Provided, however*, that no such school shall be required to admit non-resident pupils unless they shall pass an examination in all the branches prescribed by law as requisite to a third grade county certificate.

SEC. 3. The said board shall require of the schools applying for such pecuniary aid, as prerequisite to receiving such aid, compliance with the following conditions, to-wit:

First—That there be regular and orderly courses of study, embracing all the branches prescribed as prerequisite for admission to the collegiate department of the university of Minnesota.

Second—That the said schools receiving pecuniary aid under this act, shall at all times permit the said board of commissioners, or any of them, to visit and examine the classes pursuing the said preparatory courses.

SEC. 4. The said board of commissioners shall cause each school receiving aid under this act, to be visited at least once in each school year, by a committee of one or more members, who shall carefully inspect the instruction and discipline of the preparatory classes, and make a written report on the same immediately. *Provided*, that the said board may, in their discretion, appoint in any case, competent persons to visit and inspect any schools, and to make report thereon, and no money shall be paid in any case, until after such report shall have been received and examined by the board and the work of the school approved by vote of the board.

SEC. 5. The said board shall receive applications for such schools for aid as herein provided, which applications shall be received and acted upon in the order of their reception. The said board shall apportion to each of said schools which shall have fully complied with the provisions of this act, and whose application shall have been approved by the board, the sum of four hundred dollars ($400) in each year; *provided*, that the total amount of apportionments and expenses under this act shall not exceed twenty thousand dollars ($20,000) in any one year. The sum of twenty thousand dollars ($20,000) is hereby appropriated annually to be paid out of any moneys in the treasury not otherwise appropriated, for the purposes of this act, which amount, or so much thereof as shall be necessary, shall be paid upon the warrants of said board upon the state auditor.

SEC. 6. The members of said board shall serve without compensation, but the actual and necessary expenses of the board, of any examiner appointed by them, shall be paid in the same manner as those of state officers; *provided*, that the total expense, including the apportionments to the schools aforesaid, shall not exceed twenty thousand dollars (20,000) in any one year.

SEC. 7. The said board shall have power to establish any necessary and suitable rules and regulations relating to examinations, reports, acceptance of schools, courses of studies, and other proceedings under this act.

SEC. 8. The said board shall keep a careful record of all their proceedings, and slall make on or before the first day of September in each year, a report covering the previous school year, to the superintendent of public instruction, showing in detail all receipts and disbursements, the names and number of schools receiving aid, and the number of pupils attending the classes in each, to which report they may add such recommendations as they mav deem useful and proper.

SEC. 9. This act shall take effect and be in force from and after its passage.

Approved March 3, 1881.

Amendment Approved Nov. 18, 1881.

AN ACT TO DEFINE THE POWERS OF THE HIGH SCHOOL BOARD.

Be it enacted by the Legislature of the State of Minnesota:

SEC. 1. The high school board shall have full discretionary power to consider and act upon applications of schools for State aid, and to prescribe the conditions upon which said aid shall be granted, and it shall be its duty to accept and aid such schools only, as will, in its opinion, if aided, sufficiently perform the service contemplated by law, but not more than three schools shall be aided in each county in any one year. Any school once accepting and continuing to comply with the law and the regulations of the board, made in pursuance thereof, shall be aided not less than three years.

SEC. 2. Any assistant examiner appointed by the high school board, as authorized by law, shall be entitled to receive such compensation as the board may allow, not exceeding three dollars ($3) a day or fifty cents ($0.50) an hour; *Provided*, That no such compensation shall be paid to any person receiving a salary from a State institution.

SEC. 3. All acts and parts of acts inconsistent with this act are hereby repealed.

SEC. 4. This act shall take effect and be in force from and after its passage.

Approved Nov. 18, 1881.

RESOLUTION OF THE BOARD OF REGENTS, ADOPTED JUNE 29, 1882.

Resolved, That the record of the final examination of the students of all high schools, normal schools and academies conducted under the regulations of the high school board, be accredited on the records of the State university, and that all certificates of the board granted to pupils successfully passing such examination shall be accepted as sufficient upon their application for admission to the university.

RESOLUTION OF THE BOARD OF REGENTS, ADOPTED JAN. 24, 1882.

Resolved, That the following by-law relating to the admission of students to the university be adopted:

Applicants for admission, who have passed examination in any branch of the course of study prescribed by the State high school board, shall be excused from examination therein by the faculty concerned, on presentation of their certificates.

The final certificate of the high school board that an applicant has passed examinations in all of the course of studies, as prescribed by them, shall be accepted in lieu of all examinations for admission.

RULES AND REGULATIONS.

II. APPLICATIONS FOR AID.

1. Applications for aid under the statute shall be made on or before September 1st, in each year, to the board, upon blanks furnished, upon application, by the secretary.

2. These applications shall be made through the secretary, and be filed by him in the order of their receipt.

3. These applications shall be considered in the order of their receipt.

4. When accepted at the fall meeting, each school shall be entitled to receive a certificate for the appropriation of four hundred dollars at the spring meeting following, upon condition that the school has been conducted according to the regulations and has passed an inspection satisfactory to the board.

The appropriation made to the several high schools shall be faithfully used for the improvement and support of the high school, and at the end of the year the treasurer shall report to the State board the manner of its expenditure.

5- A school accepted shall remain upon the list three years, upon condition of compliance with the regulations.

6. A school not passing final inspection is, *de facto*, removed from the list, and can be re-entered only by a renewal of its application.

III. CONDITIONS OF ACCEPTANCE.

7. There must be a well organized graded school, having not less than three distinct departments below the high school, and including not less than eight years of elementary and grammar school instruction.

8. The school must be provided with suitable rooms, furniture and apparatus for good work.

9. The school shall hold sessions of not less than nine months each year.

10. Each department shall be supplied with a teacher whose qualifications have been certified to upon examination by an authorized examiner of the district, county or State.

11. The high school department shall consist of at least twenty pupils, who shall be entered upon examination as required in Regulation 17.

12. Not less than five of this department shall pursue the entire university preparatory course, and shall be known as the university preparatory class.

Others of the high school may omit Latin in the discretion of the principal.

13. The high school shall be open, free of tuition, to all non-resident pupils upon passing the examination required by Regulation 17.

14. High schools not receiving aid under this statute may, by application to the board, avail themselves of the advantages of the state examinations in lieu of the entrance examinations to the university.

15. The course of study shall include at its minimum the following course to be known as the University Preparatory Course.

FIRST YEAR.

Arithmetic, Elementary Algebra, English Grammar, Geography, United States History, Latin Grammar and Reader.

SECOND YEAR.

Natural Philosophy, Physical Geography, Elementary Astronomy, General History, Plane Geometry, Physiology, Cæsar completed, Cicero begun.

THIRD YEAR.

Elementary Chemistry, Geometrical Drawing, Botany, Ancient History, Algebra to quadratic equations, Solid Geometry, Cicero completed, Virgil completed.

There must be exercises in reading, writing and speaking regularly throughout the course, and when practicable in vocal music and free hand drawing.

This course may be extended in the discretion of the local board, provided that nothing shall be done to embarrass the regular prosecution of the course to its completion.

16. This department shall be in the charge of a principal or assistant holding the certificate of the High School Board.

IV. CONDUCT OF THE SCHOOL.

17. Pupils admitted to the High School shall pass satisfactory examination upon questions prepared by the Principal of the school as follows:

Reading, Fourth Reader, Spelling in the same, Arithmetic, including operations in the fundamental rules, common and decimal fractions and compound numbers, Grammar, syntax and etymology, of Green's Introduction, or its equivalent, Geography, including a general knowledge of the climate, productions of the world, the location and capitals of the principal political divisions, and also a fuller knowledge of the United States and its history.

The standard for entrance may be higher, in the discretion of the local board. (N. B. Regulation 23.)

18. Examinations upon the subjects embraced in the university preparatory course shall be held twice a year, viz., on the last Monday of February and the last Monday of May. Examination questions will be sent to the clerk of the local board, or to the superintendent of schools, provided he is not the principal of the high school, twice a year, in time for the examinations.

19. All examination papers shall be first examined and marked by the principal, and afterward forwarded to the examiner.

20. All pupils who pass in the studies examined, upon the decision of the examiner, shall receive certificates of standing, which will, by authority of the board of regents, be accepted at the university in lieu of its own entrance examinations.

21. In case of material difference between the estimates of the examiner and the principal in the examination of papers, upon the request of the principal the papers shall be referred, for re-examination, to the professor in the university whose department includes the subject in question, and his decision shall be final.

22. Upon passing final examination the pupil shall be pro-

moted to the next study in the course, and the course shall be pursued continuously without unnecessary delay.

23. If studies of the preparatory course are completed by pupils before entering the high school, then, upon their admission to the high school, they shall not only pass the entrance examination required in regulation 17, but shall also be examined as soon as possible upon the questions of the board in studies completed, and their papers shall be forwarded to the examiner.

24. A copy of the course of study pursued by each school shall be kept on file in the office of the secretary.

25. In the estimate of work done, grading shall be as follows: 100, perfect; 90, excellent; 80, very good; 70, fair; 65, to pass.

26. The principal of each school shall report to the board the condition of the school at the end of each term, as required in the form provided.

27. The principal shall transmit to the secretary a report of final examinations at the same time that he forwards the examination papers to the examiner.

V. EXAMINATION BY THE H. S. BOARD.

28. Examination of teachers for the certificate of the board will be under the direction of the examiner, and will be made by him upon application.

29. Persons who give satisfactory evidence of established success in teaching shall receive the certificate of the board upon producing the diploma of any college of established character, or the diploma of the advanced course of a State normal school.

30. Each school shall be visited during the year by one or more members of the board, or by a competent visitor appointed by the board, whose duty it shall be to thoroughly examine the school in respect to its standard of admission, the completeness of its organization, the thoroughness of its instruction, and to report the same to the board.

VI. MEETINGS OF THE BOARD.

31. The regular spring meeting shall be held at the call of the president on or about the first Tuesday in July, and the regular fall meeting on or about the second Tuesday in September.

32. At the spring meeting the visitors shall submit their re-

ports of schools visited; the examiner shall make his report of examinations made, (1) number examined, (2) number passed and number rejected, in each branch, and upon the basis of these reports, as they show that the schools have been efficiently conducted, the board shall apportion the amount allowed, and shall issue certificates for the same to the treasurers of the several local boards.

33. At the fall meeting the board shall consider the applications of schools for aid, and upon satisfactory proof that the district is prepared to support a high school department, notice shall be given to each school of its acceptance, conditionally as stated in regulation four.

VII. REPORTS.

34. As soon as practicable after the spring meeting the board shall publish a report of all schools passing final inspection.

35. The board shall also report through the Department of Public Instruction, to be included in the biennial report of the State Superintendent, a summary of the reports of the several schools aided, showing attendance, examinations passed, and such other matter as may be of interest to the public. They shall also report the disbursement of funds to schools, and expenses incurred in administering the law.

THE HIGH SCHOOL EXCHANGE.

By Professor C. W. Hall.

I.

THE SPECIMENS.

A system of exchange of geological and mineralogical specimens among the high schools of the State has been instituted through the department of geology and mineralogy in the State University. The plan was suggested by the many calls from these schools for specimens to illustrate a course in the elements of geology. It is intended to enable any school of the State to secure for its use a typical series of Minnesota rocks, fossils and minerals, at a trifling expense to itself of time and trouble. The collecting by any school of sets of duplicate specimens of the rocks, fossils and minerals of its locality, and forwarding the same to the University, will entitle it to a series representing as completely as possible all the other localities in the State, together with such localities outside of the State as can be sampled.

The specimens sent to the University by any high school should be as perfect as possible; hence great care must be taken in collecting, preparing and shipping. The following directions upon these points, copied from the regulations of the United States geological survey, are concise and may well be followed:

"Lithologic specimens, especially of crystalline rocks, should be taken from fresh, unweathered portions and be shaped in the field. Typical specimens for cabinet collections should not be much less than three by four inches square, and, if possible, not over one inch thick, with thin edges and square corners.

"Care should be taken to avoid staining the specimens with the moisture of the hand or by other means.

"No general rule for the size and form of mineral and ore specimens can be given. They should be large and typical.

"Duplicate specimens of the same rock, mineral or ore from the same locality should be given the same number as the original. Specimens selected to illustrate varieties of texture are not duplicates.

"In collecting fossils there are reasons additional to those above for the accumulation of abundant materials. * * * *

"As a rule, imperfect specimens should not be discarded, even when the collection contains perfect specimens of the same species. * * * All the specimens taken from one bed in one locality, though they may be of diverse species, may be given one number (unless one or more of the species can be identified; in that case all identified specimens should be named and numbered separately). * * * Great care should be taken in recording the locality where fossils are found."

Every stone, mineral, ore and fossil should be wrapped separately in paper and sufficient care taken to guard against crumbling and breaking, even though the box be handled somewhat roughly in transport. The boxes in which specimens are sent should be of small size so that one man can handle them easily. Each box should be bound with hoop iron or band hooping unless it holds the nails unusually well, and have this plain direction marked upon the cover: Prof. C. W. Hall, University of Minnesota, Minneapolis. A list of the contents should be sent by mail at the same time.

If the specimens are carefully dressed to the size specified, *i. e.* 3x4 inches and one inch thick, or thereabouts, with few hammer bruises, fifty duplicates will be accepted, though seventy-five would be preferred, as many institutions outside our list of high schools, and even outside the State, are asking for these sets.

It will not answer the requirements of this exchange that any school box and forward a miscellaneous lot of rock samples; the specimens must be types of the local features of some formation or a particular phase of it; they must, in short, be selected to illustrate principles in lithological, structural or stratigraphical geology.

The minerals, ores and fossils should be collected with the the same idea of type specimens in mind, for illustrating fairly the locality whence taken. It will also be to the credit of each school to send as complete an illustration of the geology and mineralogy of its vicinity as possible. Indeed many points in the geology of Minnesota can be more clearly presented with a half dozen type specimens from one neighborhood than with the same number from as many different counties in the state.

It is intended soon to have ready a brief description of the samples distributed, with an outline of the general character of the formations occurring in this State. Such a description cannot be prepared until a large part of the material is at hand, as specific description will better accord with the objects of this exchange than will any generalities upon the rock species represented.

After this plan of exchange has been tested, if it prove an incentive to the use of illustrative methods in teaching, afford to students encouragement to study the physical features of their own neighborhood and prompt them to compare its products with those of other parts of the State, a similar opportunity will be offered for the exchange of zoological specimens. These sets will be collected to illustrate the fauna of Minnesota, and so far as practicable, of the whole upper Mississippi valley and the lake region.

All schools desiring to take part in these exchanges should make early application and contribution and thereby accelerate the collection of material.

II.

THE SCHOOL BOARD.

Too much emphasis cannot be placed upon the importance of collections and apparatus in the equipment of every school. No intelligent farmer, mechanic or business man could expect remunerative work from an employe without supplying him with an approved outfit of tools; yet it does happen that men from these same classes acting in boards of education too often hire teachers and insist upon good work or prompt retirement, without providing them with the simplest aids to success. It is surprising how helpful an equipment can be collected by any school when a little money and a little effort are given each year to this object. The most costly and most elaborate supply of material and apparatus is not always the most effective for the object in view; good judgment is just as essential in the selection and use of all the appliances of the school room.

Whatever is worth buying or collecting is worth preserving.

Cabinets and cases should be provided in which everything can be stored away from dust and careless fingers. The same spirit that dissects, past restoration, the family clock or sewing machine, may cost the school district many dollars unless the collections and apparatus are protected against it. This protection need not be costly, but it ought to be convenient, accessible, and, as far as possible, dust and insect proof. Habit is a powerful factor in the policy of a school board; so the habit of giving, even if it be a little, each year, towards an equipment for scientific work, will enable the management all the more readily to meet all reasonable requests from teachers and pupils. Teachers are responsible for the property placed in their care; they should be held to their trust. To secure proper oversight, the principal should be furnished with a register in which to record the name, locality, name of the collector and date of receiving each specimen, together with any interesting data touching the history or character of the same which may be known to the donor or collector.

III.

THE TEACHER.

The teacher on his part should not feel that his duty is done when the specimens are catalogued, labeled, exhibited to the pupils and put safely away in their places. Specimens should be used often in the work of the class. If the object be one that will not suffer injury from careful handling, pupils should be allowed to take it in their hands; thus another sense is brought into use in the process of acquiring knowledge of the external world.

Every teacher himself should not only observe and encourage his pupils to do so, but he should feel that he is the head of a committee for scouring the county and neighboring counties for every sort of specimen that will add to their mutual profit and the effectiveness of the school work in future years. Yet not everything that is gathered need be saved; the teacher should carefully sift the material and only that which has a value beyond that of being the find of the day should be catalogued, *and what is catalogued must be preserved.* It is a poor inducement to boards of education and donors to see property buried in dust, lost in some unexplained manner, or fallen into disuse through the indifference or incompetency of teachers.

IV.

THE MUSEUM.

A hearty and liberal co-operation in work of this character by boards of education, teachers and pupils, will yield surprising results. A local museum can be founded, which, without containing many specimens not common to its town and county, will still contain much valuable material. For instance, samples of all the rocks and drift boulders; clays and sands, and brick made from them; fossils and minerals; soils, subsoils and peats, would make in any of our counties an instructive series. Specimens of wood and timber-trees, nicely dressed, could be prepared; and the botany classes could collect and preserve a school herbarium of from five hundred to one thousand or more species out of the sixteen hundred and fifty species now known in the State. In zoology especially, large collections can be secured. The fishes, reptiles and amphibians would make an interesting series of alcoholic preparations. One thousand or more insects of special interest to the farmer and gardener could be gathered in a single season and preserved as dried specimens. Two hundred and fifty birds could be taken as residents at one season or another in any part of the State; these, as mounted specimens, would prove of striking interest to many besides the pupils of the school.

The High School Board feels assured that the different departments of the State University will extend all the aid in their power in the way of suggestions, directions, and material to those schools calling upon them.

V.

SOURCES OF INFORMATION.

One very useful means of increasing the resources of schools through reference books is very generally neglected, and that is the securing of files of the various state documents. Among them the following are of interest and value in affording information touching the material development of the State from many view points:

The reports of the Board of Regents of the University, containing the report of the State Geologist and of the various departments of instruction, as of agriculture.

The reports of the Railroad Commissioner.

The reports of the secretary of the State Board of Health.

The pamphlets and circulars of information published by the secretary of the Board of Immigration.

The report of the Department of Public Instruction.

The publications of the State Horticultural Society.

These documents and reports will be gladly furnished school districts upon application to the officers of the various institutions and departments of State government represented.

MATHEMATICS.

By Professor John F. Downey.

To supply varying demands and to accommodate newly developed branches of science, courses of study change from time to time. Whatever innovations may be made, however, mathematics, on account of its extensive practical applications and its great value in cultivating accuracy of statement, logical reasoning and habits of close mental application, must continue to occupy, in every well regulated course of study, a prominent place. It is, therefore, of first importance that pupils be rightly started in their mathematical work. In no other department, perhaps, does success at any stage depend so much upon a ready acquaintance with what has gone before. Hence teachers should spare no pains to have their pupils thoroughly grounded in the elements. The following discussions are given with the double view of being suggestive to teachers and pupils and serving as a guide to those preparing to enter the University:

I. ARITHMETIC.

The course in arithmetic should include the following topics: The fundamental rules, cancellation, greatest common divisor, least common multiple, common fractions, decimal fractions, denominate numbers, ratio and proportion, percentage (including profit and loss, commission, stocks, taxes and duties, exchange and insurance), simple and compound interest, discount, partial payments, equation of payments, simple and compound partnership, annuities, alligation, involution, evolution and the metric system.

Proofs by casting out the nines, circulating decimals, continued fractions, permutations and combinations may be omitted, and arithmetical and geometrical progression may be reserved for algebra. Students not intending to study geometry should take mensuration as generally given in arithmetics.

It would seem superfluous to urge that arithmetic, which is a necessary preparation for every vocation, which is the first and indispensible step in developing the reasoning powers, which forms the basis of all subsequent mathematical work, should be well taught and thoroughly studied; nevertheless, it must be confessed that examinations in this subject have, as a rule, been unsatisfactory. This is due partly to a reaction from the disproportionate attention formerly given to it. When arithmetic was one of few branches taught in our public schools, pupils studied it to master it, and became very proficient. Now it is one of many studies, and, in the zeal for crowding in other branches, it has been relegated to a very subordinate place. Another cause of deficiency arises from the mistake of placing it on a par with branches that can be creditably learned by being studied through once. Prof. Davies has well said, "Arithmetic is the first subject in a well arranged course of instruction to which the reasoning powers of the mind are applied, and is the guide-book of the mechanic and man of business. It is the first fountain at which the young votary of knowledge drinks the pure waters of intellectual truth." While those subjects which consist mainly of information to be imparted, may be dropped after going thoroughly through them once with a good review, it should not be expected that arithmetic, in which demand is made upon all the reasoning faculties, in which the effort of overcoming one difficulty must furnish the strength for overcoming the next, can be mastered in this way. In going through, for the first time, any arithmetic of a series, there will be not a few methods and principles which the pupils, their reasoning powers undeveloped as they are, will not understand; and so numerous are the rules, so various the operations, so complicated the demonstrations, that many of those that are understood have not been impressed upon the mind sufficiently to be remembered. We would not attach undue importance to this subject; but the old way of studying arithmetic, not for any prescribed time, but until it was understood, mastered, commends itself strongly. Still another cause of deficiency in this subject is the immature age at which it is finished (dropped). Analytical in character, based upon principles that must be established by vigorous reasoning, drawing its materials largely from business transactions, practical in its scope yet scientific in its treatment, it is impossible for a young pupil to obtain a practical, reliable knowledge of all its departments. Hence, while arithmetic in an elementary form should be begun at an early age, the full development of it, or, at least, the final review of it, should be reserved until the more mature judgment, strengthened reasoning powers and practical experience of the pupil will enable him to comprehend it and obtain independence and confidence in arithmetical operations.

Pupils in arithmetic should be early taught the difference between rules and demonstrations, operations and analyses. Too frequently they are permitted to leave the subject when they are able to give the rules and obtain the answers to the problems. It is much easier to tell how than to explain why. A rule is of little value and will soon pass out of mind, if the principles on which it is based are not understood; and the solution of a problem amounts to nothing, if the reason for every step is not clearly apprehended. In very many cases when the pupil is asked, on examination, to demonstrate a rule or principle, he merely illustrates it with an example; and when asked to analyze a problem that he has solved, he merely tells what he has done, without telling why. It is seldom that he can explain why, for example, in dividing one fraction by another, we "invert the terms of the divisor and proceed as in multiplication," or give reasons for the rules for pointing off in multiplication and division of decimals. The pupil should not be held to useless theories and arithmetical curiosities, but should be thoroughly drilled in the fundamental principles of the science of numbers, as required in practical business transactions and as a basis for higher mathematical work.

In actual practice numerical results must be absolutely correct; hence it is of the greatest importance that the pupil acquire habits of accuracy in computing. Here the teacher can be of great service. The importance of obtaining the correct result the first time, avoiding the waste of time in hunting errors, should be impressed upon the pupil's mind. Next to accuracy in importance is rapidity. While this depends to a considerable extent on the pupil's mental quickness, much can be acquired by proper training and practice. The teacher should go through the operations of adding, multiplying, etc., aloud, and show the pupils how to save words. He should then have them go through the same and other exercises aloud, and make sure that they are practicing in the right direction; for they are forming habits that will be lasting. For example, in adding, he should not permit such phraseology as the following: seven and five are twelve, and four are sixteen, and eight would be twenty-four; but should have the pupil simply look at the figures and name the results, thus: seven, twelve, sixteen, twenty-four. Much can be done in acquiring rapidity by reading to the pupils while seated at their desks a number of examples, say eight or ten, and, at the end of a specified time, ascertaining how many have been solved by each pupil. The results should then be compared, thus arousing ambition to excel both in rapidity and accuracy.

In many vocations the numerical computations necessary are very laborious, and, at best, figuring requires considerable time; hence the teacher should render available to his pupils all of the practical, easily managed short methods and labor-saving devices at his command. Too often these are regarded as curious rather than useful, and pupils are not drilled upon them long enough to acquire command of them or to recognize the cases where they apply. The teacher who makes his pupils proficient in the use of them, renders a service that does not end with school days. These methods and devices need not be given here, as the best of them are found in arithmetics.

It is of the greatest importance that the pupil acquire confidence and self-reliance. This is possible in one way only: he must clearly comprehend the principles on which arithmetical operations are based. A prominent educator says, "It is of far more importance that a pupil be trained to think than that he become simply expert in solving problems." To solve with facility a group of similar examples, with no better reason for the operation than that it is like the model or gives the answer, affords no discipline. For this reason pupils should not be permitted, at recitations, to take their books with them to the board, with opportunity to follow sample solutions, refer to rules that have not been learned, and manipulate figures so as to give the correct result; but the teacher should, as a rule, read the examples aloud and have them solved independently of the answers, thus impressing upon the pupils the fact that the method is the principal thing, the answer serving merely as a check upon the work. He should also, at times, read examples which the pupils have not studied, whose answers they have not seen. Other arithmetics, Olney's Teachers' Hand-Book of Arithmetical Exercises, and Ray's Test Examples are good sources from which to draw for this purpose. To cultivate self-reliance in the pupil, he must be thrown as much as possible upon his own resources. When he finds himself unable to solve a problem, the assistance of the teacher should be in the way of suggestions rather than of a complete solution. A few questions regarding the principles involved, or supposing a more familiar case, will often suffice. In a subject so fraught with difficulties to the average pupil, frequent reviews are of the greatest importance. It is only by many repetitions that thoroughness can be secured.

The following text-books are among those from which a good knowledge of the subject may be obtained: Ray's Series, Olney's Series, Wentworth's Series, Davies' Series, Loomis's Series, Robinson's Series.

The following is a sample examination paper:

NOTE.—Operations as well as results are required.

1. Three men bought some petroleum stock for $75, the first paying $15, the second $55 and the third the remainder. They sold the stock for $1,500; what was each man's share of the proceeds?

2. A speculator has four tracts of land, the first containing 300 acres, the second 525, the third 225, and the fourth 375. For uniformity he wishes to divide these tracts into equal farms, and have these as large as possible. How many acres in each farm?

3. Give and demonstrate the rule for the addition of fractions.

4. The times in which A, B, C, and D can walk around a certain pond are 12, 18, 30, and 40 minutes respectively. If they all start from the same point at the same time, in how many minutes will they be together again at the same point?

5. Of 37 High School pupils 14 failed to pass the examinations; what per cent. passed?

6. In selling pork at 87½ per cent. of its cost, the loss was $3.33⅓ on a barrel; required the cost per barrel. [Solve and analyze.]

7. Solve the following by proportion: If 15,000 bricks are used for a house whose walls average 1½ feet thick, 30 feet high, and 216 feet long, how many bricks will build a house with walls 2 feet thick, 24 feet high, and 324 feet long?

8. A and B are partners: A's capitel is $4,200; B's $5,600; how much must A add to his, at the end of four months, to entitle him to half of the year's gain? [Solve and analyze.]

9. Extract the square root of 29929.

10. Given the time, rate, and interest, to find the principal. Give method and analysis.]

II. ELEMENTARY ALGEBRA.

Any of the text books mentioned below will furnish the necessary preparation in this subject. No outline or discussion of methods will be attempted here—only a few suggestions regarding the parts on which candidates most frequently fail.

As in arithmetic, pupils are liable to learn processes without principles. An eminent mathematician, referring to this fault, says: "Now, it need not be said that, in a course of education, this is a fundamental defect; it is failure just where success is vital. The processes of a mathematical science are of comparatively little worth to a great majority of those who study them; the development of the reasoning powers, to which such studies are addressed, is of the highest importance to all." Prof. Ray, late of Woodward College, says: "The object of the study of mathematics is two-fold—the acquisition of useful knowledge, and the cultivation and discipline of the mental powers * * * * * * The science of algebra, properly taught, stands among the first of those studies essential to both the great objects of education," and says that the pupil should be made to feel "that he is not operating on un-meaning symbols, by means of arbitrary rules; that algebra is both a rational and a practical subject, and that he can rely upon his reasoning and the results of his operations with the same confidence as in arithmetic." In many cases the text book is, in a measure, responsible for the defect mentioned. Not a few authors of algebra, under the delusion that they are smoothing the way for the beginner by leading up to a general truth gradually, precede a principle or rule by an explanation, with solution, illustration and demonstration so intermixed that it is impossible for the pupil to gather from it a concise, logical demonstration of the general proposition or rule. "Hence the following rule," and "From the foregoing principles we deduce the following rule," are expressions that very frequently greet the eye in these books; but "the foregoing principles" being sometimes scattered through several pages of matter, the pupil cannot determine, on being asked to demonstrate the rule, what he ought to give. In such cases the teacher should help the class to screen the compound and have them drill on the essential part until they can state the proposition or rule and give a clear, concise demonstration of it. We would by no means disparage illustrations in elementary algebra, but would encourage a free use of them. They should be distinct, however, from the demonstrations. Perhaps in some cases, where general demonstrations are abstract and difficult, it is best to leave them until the pupil has made more progress, giving him illustrations to show the truth of the propositions; but he should understand that they are illustrations simply and that rigid demonstrations will follow later in the course. By all means let him be trained in methods of reasoning as well as in methods of operating.

The topics on which candidates are most frequently found deficient are factoring, proportion, the application of the binomial theorem, the theory of exponents, and radicals. In factoring, the deficiency doubtless results mainly from want of sufficient practice, but partly from the fact that success in factoring depends much upon the quick insight of the pupil. In proportion and the application of the binomial theorem, the deficiency is due, not to any inherent difficulties in the subjects, but to inattention. In the theory of exponents and radicals, the deficiency is generally a fundamental one, a failure to understand the principles on which the operations are based; hence, the pupil has no confidence in his work, and his solutions, even when correct, are valueless. To be proficient in algebra, the pupil must be proficient in its details. He may solve many problems without finding any need of a knowledge of radicals; but he is liable, at any time, to encounter one involving radicals. Algebra proper treats, in the main, of the nature and practical use of the equation; but one can not be proficient in the use of this powerful mathematical instrument until he is able to manage all the complications that are liable to arise in it. The only remedy for the deficiency in radicals and the theory of exponents is for the pupil thoroughly to master the underlying principles. A little experience with classes in algebra will convince the teacher that these subjects are among the most difficult the pupils have to encounter. He should, therefore, dwell upon the principles involved until they are clearly understood.

The following text books are among those from which a good knowledge of elementary algebra may be obtained: Ray's Elementary Algebra, Davies' Elementary Algebra, Olney's Complete School Algebra, Wentworth's Elementary Algebra, Greenleaf's New Elementary Algebra.

Below are the questions last used by the High School Board:

1. Simplify the following by removing parentheses, etc., and combining: $2a-\{b-(a-2b)\}$, $7a-[3a-(4a-2a)]$.

2. Give and demonstrate the rule for multiplying one polynominal by another.

3. Explain why the sign should be changed when a term is transposed from one member of an equation to another.

4. A person starts from a certain place and travels at the rate of 4 miles per hour; after he has been traveling 10 hours, a horseman, riding 9 miles per hour, is despatched after him. How many hours must the horseman ride to overtake him?

5. (*a*) From $\frac{2ax-3by}{2xy(x-y)}$ take $\frac{2ax+3by}{2xy(x+y)}$.

(*b*) Divide $\frac{x^2-y^2}{x+2y}$ by $\frac{x-y}{3x+6y}$.

(*c*) Simplify $1-\frac{1}{1+\frac{1}{x}}$

6. A man buys some wheat at $1 and rye at 75 cents per bushel, the whole costing him $117.50. He then sells $\frac{1}{4}$ of the wheat and $\frac{1}{5}$ of the rye at the same rate, realizing $27.50. How many bushels of each did he buy?

7. Given $\frac{6}{x+1}+\frac{2}{x}=3$, to find the value of x.

8. Prove that in any proportion the product of the means is equal to the product of the extremes.

9. Give and demonstrate the formula for the last term of an arithmatical progression.

10. Two square rooms are to be carpeted with carpet that is one yard wide. The two require 84 yards. The side of one room is one yard greater than that of the other. How many yards are required for each room?

III. HIGHER ALGEBRA (TO QUADRATIC EQUATIONS).

The work is the same as that of the sub-freshman class in the University, which is all preceding quadratic equations in Olney's University Algebra. The subjects are differently arranged in different books, but the following are the topics embraced: The fundamental rules, factoring, highest common divisor, lowest common multiple, fractions, involution, evolution, radicals (including imaginaries), simple equations (with one, two, and several unknown quantities), problems leading to simple equations, ratio, proportion, arithmetical and geometrical progression, and variation.

What has been said under the head of Elementary Algebra regarding the common deficiencies in demonstrations and in certain topics, applies also to this part of higher algebra. The causes and the remedies are the same, and need not be repeated here.

In a recitation in algebra pupils should never be allowed to take their books to the board with them. With books in hand they can read rules that ought to be learned and follow suggestions, model solutions and penciled marginal notes of which they ought to be independent. To become self-reliant, to learn to stand alone, all such supports must be removed. While the teacher will consume considerable time in reading to the pupils the problems, the gain will far more than compensate for this loss. In addition to throwing the pupils upon their actual preparation, thus enabling the teacher to discover any deficiencies that exist, the pupils, by having to repeat the problems in their own language from remembering the sense, receive valuable culture in the art of expressing themselves.

The following text books are recommended: Olney's University Algebra, Newcomb' Algebra for Schools and Colleges, Wentworth's Higher Algebra, Wells' University Algebra (Greenleaf's series), Loomis' Higher Algebra.

The following is a sample examination paper, being the last one used by the High School Board:

1. Factor the following:
$2x^5-16x^4+24x^3$, $x^4+x^3+x^2+x$, x^3+8. $3x^3-x^2+3x-1$, $x^2-53x+360$.

2. Find the highest common divisor of $2x^3-7x^2+5x-6$ and $3x^3-7x^2-7x+3$.

3. A person walks to the top of a mountain at the rate of $2\frac{1}{3}$ miles an hour, and returns the same way at the rate of $3\frac{1}{2}$ miles an hour, and is 5 hours in walking both ways. How far is it to the top of the mountain?

4. Perform the following indicated operations and reduce the results to the simplest form:
$\sqrt{20}+\sqrt{\frac{1}{5}}+\sqrt{\frac{5}{9}}$, $\sqrt{2}\div\sqrt[3]{3}$, $(4\sqrt{3x})^4$, $(\sqrt{2}-\sqrt{3}+\sqrt{5})(\sqrt{2}+\sqrt{3}+\sqrt{5})$, $4\sqrt{-3}\times2\sqrt{-2}$.

5. Solve $6+\sqrt{x}=\sqrt{12+x}$ and $\sqrt{x}-\sqrt{x-3}=\frac{2}{\sqrt{x}}$

6. A gives B a start of 44 yards, and beats him in a mile race by 51 seconds; and afterwards gives him a start of 1 minute, 15 seconds, and is beaten by 88 yards. In how many minutes can each run a mile?

7. Reduce the following to equivalent expressions having rational denominators:

$$\frac{2\sqrt{5}+\sqrt{2}}{\sqrt{5}-3\sqrt{2}},\quad \frac{\sqrt{x}-4\sqrt{x-2}}{2\sqrt{x}+4\sqrt{x-2}},\quad \frac{3x^2}{3y}-\frac{2}{3}.$$

8. State and demonstrate the rule for finding the lowest common multiple of two polynominals.

9. Prove that the sum of two quantities is a divisor of the difference of the same even powers of those quantities.

10. Two trains, starting from two cities 98 miles apart, one running as far in 4 hours as the other in 3, met each other in 1 hour, 24 minutes. What was the speed of each train?

IV. PLANE GEOMETRY.

In the nature of the subject, a topical statement would be no guide to what is required in Plane Geometry. The work should be equivalent to that in the text books indicated below. The examination does not include ratio and proportion, these subjects being taken in algebra. Transversals, isoperimetry, symmetry, and maxima and minima of figures, being treated by few of the authors in use, are also omitted.

The pupil should not omit the unsolved problems and the undemonstrated theorems. If, in the text-book in use, these are collected at the close of the volume, instead of being scattered through the different books or chapters with which they are associated, he should not leave them until he has finished the rest of the book (in which case they will generally be omitted altogether), but take them in connection with the principles under which they fall. If he is unfortunate enough to have a book in which the author has done all the reasoning, leaving the pupil nothing to do but to follow in his footsteps, the teacher should supply from other sources theorems, problems and applications. It is not unusual to find pupils who can correctly state and demonstrate every proposition in the text-book used, remembering even the number of each and the book where it is found, who have yet mastered hardly the first geometrical principle. Give them an undemonstrated theorem, an unsolved problem, or a practical example requiring the application of geometrical principles, and they are as helpless as one who has never seen a geometry. The writer once saw a young man, fresh from the study of geometry, in which he ranked above all his fellows, being regarded even brilliant in the subject, laboring in vain in his father's shop to make from a square piece of board a regular octagon by sawing off the corners. In one of the question papers of the High School Board was the following: Required the relative capacities of two sewer pipes, the diameter of one being one and one-half times that of the others. There were few correct answers, and the various absurdities of the others indicated, not necessarily a lack of study, but a lack of intelligent study—a failure to comprehend the real meaning of a principle stated abstractly in the text. Doubtless every pupil could have demonstrated the principle on which the correct answer depends: viz., that the areas of circles (or any other similar surfaces) are to each other as the squares of their like dimensions.

These exercises, given to the pupil to work out for himself, serve a double purpose: First, they afford a test of the student's work, enabling the teacher to discover whether he is simply committing to memory the theorems and the demonstrations, or mastering the principles involved and acquiring ability to recognize them in different relations. Second, they give that facility in applying principles, that strength, self-reliance and ability to investigate, which can be acquired only by being thrown upon one's own resources. The teacher needs to use judgment in the assignment of such exercises, and to make them neither so easy and few as to afford little thought and stimulus, nor so difficult and numerous as to discourage.

If it be objected that such work removes geometry from its time-honored place as a means of developing the powers of deductive reasoning, and debases it to the rank of a mere instrument, enforcing upon students its "vulgar applications in practical affairs," we reply that we would abate nothing from its reputation as a means of training the mind to pass logically and formally from premises to conclusion, but insist that when, not in place of, but in addition to the logical and elegant demonstrations of the geometers, from Euclid down to the latest compiler, the student is led to use the principles established in solving other cases and in investigating (to him) new truths, this great end of geometry will be the better secured, and, at the same time, another most important end be subserved, viz.: the student becomes, in a measure, a geometer, and is able to use the science of geometry as an instrument long after memory fails to retain the particular demonstrations of his author. It is not wise to treat geometry as a pure science, even when following it later in the course by its applications in a separate volume on mensuration; for, in that case, many of the pupils will never reach the applications, and those who do will find themselves learning rules based upon principles which they have forgotten. Indeed any science becomes much more firmly and clearly fixed in mind, and, at the same time, becomes doubly interesting, when it is seen in connection with its applications as an art.

The student should be able to solve readily such exercises as the following:

1. It is required to divide a triangle, whose area is A and altitude H, into two equal parts by a line parallel to the base: what is the distance of this parallel from the base?

2. A cylindrical heat conductor, ten inches in diameter, passes obliquely through a basement partition, the angle made with the wall being half of a right angle: required the longest diameter of the hole in the wall?

3. Wishing to ascertain the height of the electric light mast in Minneapolis, I place my eye near the ground in such position that the top of the mast is just visible over the top of a telegraph pole that is 30 feet high. By measurement I find that the point from which the sight is taken (which is in the same horizontal plane with the bases of the pole and the mast) is 45 feet from the foot of the telegraph pole, and that the pole is 342 feet from the mast: required the height of the mast?

4. A surveyor, wishing to know the distance from the point A on one shore of a river to the point P on the opposite shore, measures off a line A B, 300 feet in length, along the shore, perpendicular to A P. Then at the point B he erects a perpendicular to B P, and extends it until it meets P A produced in C. By measurement he finds C A to be 225 feet: required the distance A P across the river.

5. The apothegm of a regular hexagon being given, required the area of the ring included between its inscribed and circumscribed circles?

6. The plat of a rectangular farm containing 12,500 square rods measures 4 inches by 20 inches: find the length and the breadth of the farm?

7. Show that if on the three sides of a right angled triangle as homologous lines any similar figures to be constructed, the area of the one on the hypothenuse equals the sum of the areas of the other two?

8. A painter fell from the 24th round of a 36-round ladder which was leaning against a vertical wall, with the top 30 feet from the ground: how far did the painter fall?

9. A military officer receives orders to build a fortification which shall be a regular pentagon 60 feet on a side. Having

neither angular instrument nor trigonometrical tables, he is compelled to lay out the work geometrically: give the process and the necessary computations?

The teacher can do much in the way of making geometry an interesting and profitable study. He should inform his pupils at the beginning that a geometer's only tools (or instruments) are a pencil, a straight edge, and a pair of compasses, or the equivalents of these. Many students go through geometry without learning that a graduated scale, a carpenter's square, etc., are not admissible as instruments in geometrical constructions, and they often present mechanical for geometrical solutions of problems. The teacher should next see to it that his pupils actually use the geometer's tools in a large number of constructions. They should not only know how to bisect a line, arc, or angle, but they should bisect it. They should not only know how to pass a circumference through three given points, but they should perform the work with several sets of points taken at random; and so with other problems. It is not necessary that all the figures on the board for purposes of demonstration should be constructed geometrically, but the pupils should have much exercise in actual and accurate constructions.

An excellent means of interesting pupils, and, at the same time, acquainting them with practical details and with the necessity of care and accuracy, is to give them specific problems pertaining to the locality, requiring them to make the necessary measurements and execute the necessary details. One of the best fields from which to draw for this purpose is the various methods of overcoming obstacles to alignment and measurement in chain surveying. The only implements needed are a few straight, slender stakes for indicating points and lines, a non-elastic rope (or pair of driving lines) for erecting perpendiculars, making measurements, etc. The writer remembers the interest with which a class listened to the explanation of a method of measuring the length of an inaccessible line, and the satisfaction manifested when, after applying the method to the measurement of the distance between two stakes on the opposite side of a river, the class found that their computation agreed within three inches of the measured length. Let the class ascertain the length of a pond, the breadth of a lake, the height of a church steeple, the width of a river, the area of a many-sided field that can be divided into simple geometrical figures;

let them interpolate points between two stakes, one of which cannot be seen from the other; let them divide a triangular field into two equal parts by a line perpendicular to one side, also by a line from a given point in one side; let them divide a triangular area into two parts having any given ratio by a line parallel to one side, etc., etc. In such problems as the above the teacher should generally explain the method, and leave the demonstration and, in a large measure, the execution of it to the class.

The teacher may often interest his pupils and, at the same time, aid their memories and contribute to the breadth of their understanding, by showing the intimate connection between propositions that are treated separately in the text. For example, he may show that, in the measurement of angles with reference to a circumference, all the cases come under one general proposition, which may be stated thus: When two lines intercept a circumference, the angle between them is measured by half the (algebraic) difference of the intercepted arcs. The class will recognize this, in its most general application, as the case of two secants. The teacher can then show that this is generic and that under it, as species, fall the cases of the secant and tangent, two tangents, tangent and chord, inscribed angle, angle between two intersecting chords and an angle at the centre—explaining the disappearance of one of the arcs in some cases and its change of sign in others. Again, authors, in their definitions, make the quadrilateral a genus, with the trapezium, the trapezoid, the parallelogram, the rectangle, the rhombus and the square falling under it as species and varieties. The teacher may show that the areas may be treated in the same way—thus, if we represent two of the opposite sides of the general quadrilateral (or trapezium) by B and b, and the altitudes of the two triangles formed by drawing a diagonal, by H and h, we have for the area $\frac{1}{2}$ (H B+h b). If B and b become parallel, we have the trapezoid, H and h become equal, and the general expression becomes $\frac{1}{2}$ H (B+b). If B and b become equal, we have the parallelogram (which may be a rhomboid or a rhombus), and the general impression becomes H B. If the angles become right angles, we have the rectangle, H becomes equal to a side which we may call S, and the last expression becomes S B. If, in the last case, the adjacent sides become equal, the expression becomes B^2. Finally, if b grows shorter and shorter, until it disappears, the general expression becomes $\frac{1}{2}$ H B, as it should for a triangle. Many cases in which similar relations may be shown will occur to the teacher.

In definitions and theorems, students should be held to the exact language of the text (unless the teacher can substitute better), "not to be recited as a mere parrot-like performance, but as a means of acquiring the language of the science, and attaining facility in clothing its thoughts in a becoming garb." In demonstrations, explanations and illustrations, considerable latitude may be allowed. Students should be required, however, to give their work in good language, with the steps arranged in the order of their logical sequence. Some pupils regard the lesson as prepared when they have studied the propositions until they understand them. To permit such to drag through the demonstrations assigned, stopping to study out the different steps of proof, taking twice the time that belongs to them, is to distract the attention of the class and destroy all interest in the subject. Attention, readiness, life, are indispensable in a recitation in geometry. The student should study the lesson not only until he understands it, but until he can recite it fluently, and then until he can remember it. A most excellent practice in the preparation of a lesson is to close the book, after sufficient study, and draw every figure and demonstrate aloud every proposition. So long as the student cannot, by himself, go through the lesson without hesitation, he may be sure that he is not prepared to go through it in presence of the class. The teachers should encourage the pupils to draw neat figures, and should not, of course, permit them to open their books during recitation.

The following text-books are recommended: Welsh (Essentials of Geometry), Wentworth, Olney (New Geometry), Newcomb, Ray, Robinson.

As reference books, may be mentioned the following:

Playfair's or Todhunter's Euclid, Chauvenet, Halsted's Metrical Geometry, and the publications of the English Association for the Improvement of Geometrical Teaching.

Those making a specialty of the higher departments of geometry, will find plenty of material in the works of Poncelet, Chasles, Vincent and Bourdon.

The following is an examination paper recently used by the High School Board:

NOTE.—Finish and demonstrate all incomplete theorems.

1. The sum of the three angles of a triangle is, etc.

2. Prove that if two opposite sides of a quadrilateral are equal and parallel, the figure is a parallelogram.

3. At a given point in a straight line, to construct an angle equal to a given angle. [Give method and proof.]

4. To construct a triangle which shall be equivalent to a given polygon. [Give method and proof.]

5. In a right angled triangle, the perpendicular from the right angle is a mean proportional between, etc.

6. The area of similar triangles are to each other as, etc.

7. Find the area of a regular hexagon, one of whose sides is 4.

8. Explain how the ratio of the radius of a circle to its circumference may be found approximately.

9. What is the area, in acres, of a circular race track two rods wide, the outer circumference of which is one mile?

10. Prove that if one of the acute angles of a right angled triangle be double the other, the hypothenuse will be double the shortest side.

V. SOLID GEOMETRY.

The following outline indicates the ground covered in solid geometry:

I. Lines and planes.
    1. Relation of lines to a plane.
    2. Relation of two or more planes.
    3. Polyhedral angles.
II. Polyhedrons.
    1. Prisms.
    2. Pyramids.
    3. The five regular solids.
III. Curved surfaces.
    1. The sphere.
    2. Spherical triangles and polygons.
    3. The cylinder.
    4. The cone.
IV. The measurement of solids.
    1. Surfaces.
    2. Volumes.

All that has been said with reference to methods in plane geometry applies with equal force here, and need not be repeated.

The student should be able to solve such exercises as the following:

1. The lateral surface of a right cone is double the area of its base: what is the ratio of its altitude to the radius of its base?

2. The angles of a spherical triangle are 75°, 80° and 95°: find the sides of its polar.

3. The sides of a spherical triangle on a sphere whose radius is 16 inches, are 45°, 90° and 120°: find the lengths of the sides in inches.

4. The diameter of a sphere is 12: what is the circumference of a small circle at a distance of 4 from the center?

5. The area of a small circle of a sphere is 380.1336, and is situated at a distance 7 from the centre of the sphere: required the volume of the sphere.

6. What is the largest cubical paper weight that can be made from an ivory billiard ball 2 inches in diameter?

7. An irregular piece of ore, when immersed in a cylindrical vessel 10 inches in diameter, raised the level of the water 6 inches: what was the volume of the ore?

8. Find the entire surface of a right prism whose altitude is 12, and whose base is an equilateral triangle, each side of which is 4.

9. The surface of a pyramid is 64: what is the surface of a similar pyramid whose volume is 27 times as great?

10. A physician prescribes one-third of a gill of medicine for a patient. The patient has a conical wine glass containing one gill: what will be the depth of the liquid compared with the whole depth of the glass?

11. A spherical leaden counterpoise, 3 inches in diameter, is pierced through the centre by a round hole 1 inch in diameter: in what ratio does this diminish the weight?

12. On a globe 16 inches in diameter, what is the area of a spherical triangle whose angles are 75°, 80° and 120°?

13. A wagon box for hauling saw dust has slanting sides, and is 5 feet deep, 12 feet long, $3\frac{1}{2}$ feet wide at bottom, and 5 feet wide at top: what is its capacity in cubical feet?

As exercises in which the students themselves make the measurements, let them find the cubical capacity of the school house attic, of the school house coal bins, of an elevator or warehouse in the vicinity, of a wooden pail, of an oil can with conical top, of a railroad watering tank; let them find the volume of a tapering saw log, of a slanting retaining wall, of a foundation, etc.

For purposes of instruction, a slated globe is very necessary. This should not be mounted, but it should rest on the table in a rope ring (or, better, a chemist's retort ring of braided straw). It can then be turned easily in any direction. There should be provided a rigid quadrant, with a sharp point on the inside at one end for pivot, and a hole for crayon at the other. It is better to have a graduated quadrant with movable clasp for crayon, so that small circles of known radii may be described. When the student sees the figures constructed on the slated globe, he obtains a much clearer conception of them than he can from the flat page or board. The problems and exercises of spherical geometry should be executed on this globe by the student.

Models of geometrical solids are useful. When these are not provided, they may be made by the students from wood, paper, or large potatoes. For example, in proving that the facial angles of a triedral are the supplements of the diedral angles of the supplementary triedral and conversely, a triedral cut from a large potato, with pins stuck near the vertex perpendicular to the respective faces, serves an excellent purpose.

The following is a sample examination paper:

NOTE. — Finish and demonstrate all incomplete theorems.

1. The sum of the three angles of a spherical triangle is, etc.
2. Prove that the volume of a pyramid is one-third the volume of a prism having the same base and altitude.
3. Find the ratio of the volume of a sphere to that of its right circumscribed cylinder; *i. e.*, the cylinder whose bases and elements are all tangent to the sphere.
4. Prove that when the three facial angles of one triedral are respectively equal to the three facial angles of another, the triedrals are either equal or symmetrical.
5. The sum of the diedral angles of a convex polyhedral is, etc.
6. Prove that if the slant height of a right cone is equal to the diameter of its base, its lateral surface is double the area of the base.
7. A sphere is divided by a plane which bisects the radius perpendicular to it; what is the ratio of the surfaces of the two parts? On what principle does this depend?

8. Prove that the polar triangle of a polar triangle is the original triangle.

9. A mow occupies all the upper part of a barn, which is 25 feet by 40 feet. The height of the lowest part of the roof above the floor of the mow is 8 feet, and the height of the ridge (which runs lengthwise of the barn) is 18 feet. How many loads of hay, each containing 1,300 cubic feet, can be stowed in the mow?

10. Prove that if each of two planes is perpendicular to a third plane, their line of intersection is also perpendicular to that third plane.

VI. ELEMENTARY ASTRONOMY.

As most of the methods of the practical astronomer, based, as they are, on the higher mathematics, are beyond the reach of students in an elementary course, the work in astronomy must consist mainly of information concerning the heavenly bodies and the laws by which they are governed, and a familiarity with the principal constellations.

The course should embrace a knowledge of the construction and principle of the telescope and the transit (the principal instruments employed in astronomical observations), the meaning and use of astronomical terms, the shape of the earth and the various methods of determining it, laws of terrestrial gravitation, the proof that the earth rotates on an axis, the effect in different latitudes of this rotation, cause of the difference between solar and sidereal time, cause of the variation in solar time, cause of the difference between apparent and mean time, cause of the difference between mean time and standard time, cause of twilight, the structure of the solar system, the evidence that the earth revolves around the sun, cause of the changes of season, the cause of the direct and the retrograde motion of the planets, the relation of parallax to distance, Kepler's laws of planetary motion, universal gravitation and its effects, the magnitude and physical features of the sun, the absolute and relative times of revolution, distance and telescopic appearance of the planets, precession of the equinoxes and its cause, the natural divisions of time and the calendar, the relation of the moon to the earth, the moon's motion and the cause of its phases, cause of the movement of the nodes and the perigee, causes of the various librations, character of the moon's surface, causes of eclipses of the sun and the moon, some of the means of determining the terrestrial latitude and longitude, refraction and aberration, the nature of meteors, characteristics of comets, the constellations of the zodiac and the more conspicuous of the other constellations, the nature of the fixed stars, something of their magnitudes and distances, variable and temporary stars, multiple stars, nebulæ and clusters, proper motions of the stars and the sun, etc., etc,

In this study it is necessary for the student to go beyond the diagrams and illustrations in the book, and be able to comprehend the various circles, planes, revolutions, and relations as they exist in the heavens. For conveying clear ideas and conceptions of these, descriptions, explanations in words, are much better than cuts. The student should be able, independent of diagrams, to see, in his mind, celestial phenomena as they occur.

As this is a science in whose development no advance has been made without careful observation, the student should be led to observe, as far as possible, celestial phenomena. Let him observe what constellations, in his latitude, never set; what stars change their positions least; the height of the sun at noon in winter as compared with that in summer; whether the sun through the entire year rises or sets at the same point on the horizon; at what time the full moon rises; whether a planet which he is able to follow moves eastward continually among the constellations; whether twilight is longer at one season that at an another; whether there is any relation between the direction of the points of the crescent moon and the position of the sun; whether the sun and the moon appear larger at one altitude than at another; whether the discs of the sun and the moon are visibly elongated in one direction when near the horizon, etc., etc.

For the purposes of instruction telluriums, orreries, planetariums and all other apparatus for illustrating the relations and motions of the bodies in the solar system, with the exception, perhaps, of a boy's top for illustrating the precession of the equinoxes, are worse than useless. It will be found either that it is more difficult to explain the machine than the phenomenon it is designed to illustrate, or that it not only does not illustrate it, but gives erroneous conceptions. For example, in an orrery, if the earth be represented by a globe two inches in diameter, Jupiter, to the same scale, must be represented by a globe nearly two feet in diameter; and the globe representing the sun could not be contained in the schoolroom, as it would be more than eighteen feet in diameter. Then, to use the same scale for distances (as we must in order to give correct notions), Neptune would be more than eleven miles away. This shows how impossible it is to represent truly the solar system by a machine. These machines are not only constructed on at least four different scales, two for magnitudes and two for distances, but in most of them the revolutions are performed, not in planes nearly parallel with the ecliptic, but parallel with the horizon of the place. These, and many other false impressions which they convey to the uninformed mind o the pupil, are overcome only with great effort. These toys serve their purpose, in most cases the purpose for which they were designed — they sell, and many have been palmed off on well meaning but deluded school boards — but they should have no place among astronomical apparatus. For studying the constellations the Celestial Globe, the Astral Lantern and the Planisphere are very useful, the Celestial Globe affording, in addition, an excellent means of indicating the positions of the different circles of the celestial vault, etc.; but, aside from instruments for actual observations, these are the only apparatus needed for teaching astronomy.

While the examinations by the High School board in elementary astronomy proper have been satisfactory, they have shown that one department, or associated branch, viz., uranography, has received little attention. Like geography (which it very much resembles in character), it is more readily remembered when acquired while the learner is young. The teacher has no difficulty in keeping his pupils interested, enthusiastic even, in the elements of astronomy proper; but he finds the interest flagging when they are set to the task of learning the constellations. In the former, their minds are constantly fed with something new; in the latter, they have little besides the drudgery of learning to what arbitrary groups the different stars belong, and committing to memory a great many details. Nevertheless, while this is not astronomy, is not science, it yields much satisfaction when once acquired, and is a very important preparation for the study of astronomy. In all advanced works on astronomy, a knowledge of uranography is presupposed.

What, then, is the best means of becoming familiar with the constellations? It is impracticable for the teacher, by pointing them out, to familiarize his pupils with them; for two or three or a dozen nights will not suffice, and he can not afford the time In most cases he can do little more than conduct an occasional out-door review. A star atlas of some kind is indispensable. Proctor's is, perhaps, the best; but this is large and expensive. Burrett's Geography of the Heavens has been much used, but the mythological figures on the maps are so conspicuous as to be confusing. A better atlas for beginners is Proctor's Half Hours with the Stars. This can be obtained from Van Nostrand, 23 Murray Street, New York. The Planisphere is more conveniently carried, and can be procured, in pocket form, for twenty-five cents, by sending to The Schermerhorn School Agency, New York. Any of these will prove somewhat troublesome. Most star maps must be held over-head, so as to bring the stars on the map in the same relative positions as those in the sky; and, to say nothing of the strain on the eyes and the muscles of the neck, it is difficult to manage map, lantern, and head, so as to refer readily from the page to the stars, and from the stars to the page.

The best device for facilitating this work is the Astral Lantern, invented by F. H. Bailey. This is not an automatic toy, but a system of mounted and adjustable star maps, which can be set for any latitude and any date. The light, which is inside the apparatus, shines through the star places, the letters, the names, and the dim outlines of the mythological figures, thus rendering the constellations and the individual stars very easily recognizable. By mounting the lantern at the height of the eyes, it is as easily read as a book, and so faithfully are the heavens transcribed to its sides, so much information does it convey regarding the location of nebulæ, binary, multiple, and variable stars, etc., that studying the heavens is changed from uninteresting drudgery to a delightful occupation. It is not necessary for each pupil to be provided with one of these lanterns — they are too expensive for that. Only one is needed for a class, and this one should be the property of the school. After the teacher has explained the use of the Lantern, he can allow the class, in sections of not more than eight (two to each of the illustrated sides of the apparatus), to study at the home of some one of them, the constellations, evening after evening. The teacher should caution them to confine themselves to a few constellations at a time, taking only the brighter star of these; otherwise there is danger of their becoming discouraged, by finding themselves forgetting about as fast as learning.

The Astral Lantern can be obtained from the New England School Furnishing Company, Boston. The price to schools is thirty dollars.

The teacher of elementary astronomy can go as far beyond the text book as his time and the capacity of the class will permit. Fruitful subjects for this are the following: The history of astronomy; the practical uses of astronomy; the construction and use of the spectroscope; the marvelous achievments of the spectroscope; the physical character of the sun; an account of the attempts to measure a star parallax; the various theories for the change of brightness of the variable stars, and the appearance of new stars; discussion as to whether the stars, like our sun, are attended by planets, and whether these and the other planets of our system are inhabited; great comets, and the dismay they have sometimes occasioned; what the heavens teach of the Creator, etc., etc.

The teacher should not allow his class to close their work, no matter how well performed, with the impression that they know astronomy, when, at the best, they have acquired the merest rudiments. Not that they should be made dissatisfied with what they have accomplished—for it is invaluable as a part of their store of general information, and is the result of centuries of toil and patient watching—but they should not be deterred, by the delusion that they have learned about all that is known of the subject, from sailing out into the great ocean along whose borders they have been cruising. Let them understand that the methods of the science are still before them, that the origin of astronomy is contemporaneous with that of the race itself, that many of the brightest geniuses of every age have bent their energies to the unraveling of the mysteries of the heavens, that the human mind has won in this field its most brilliant triumphs, that it not only employs in its service the whole range of mathematics, but, in its gigantic demands, has caused that science to be greatly advanced and that it gives more exalted conceptions of the Creator than can be obtained in any other way.

The standard American works, Chauvenet's Practical Astronomy, Watson's Theoretical Astronomy, Loomis's Practical Astronomy, need hardly be mentioned as reference books for elementary astronomy; but the following will be found very serviceable: Grant's History of the Physical Sciences, The Sun by Richard Proctor, The Sun by Prof. Young, Newcomb & Holden's Astronomy (larger work), Newcomb's Popular Astronomy, Ennis's Origin of the Stars, The Moon by Nasymth, The Spectroscope by Roscoe, Mitchell's Planetary and Stellar Worlds, Mitchell's Popular Astronomy, Proctor's article on Astronomy in the last edition of the Encyclopedia Britanica.

Lockyer's Astronomy and Newcomb & Holden's Astronomy (briefer course) as text-books, and Proctor's Half Hours with the Stars and Bailey's Astral Lantern for studying the constellations, are recommended.

The following is a sample examination paper:

1. Define right ascension, declination, zenith, ecliptic, parallax, and state Kepler's three laws of planetary motion.

2. What is the length of the solar year? As this is not a whole number of days, how is the calendar arranged so as to have the year end at midnight, and keep the vernal equinox on the twenty-first of March? Does a year represent exactly the time of a complete revolution of the earth around the sun? Why?

3. Explain the cause of the phases of the moon. At what time does the full moon rise? Does a lunar month (or the time from one new moon to the next) represent the time of a complete revolution of the moon around the earth? Why? How does it appear that the moon rotates on its axis in the same time that it revolves around the earth?

4. Name three stars of the first magnitude, and state in what constellations they are located. Name, in their order, the constellations of the zodiac. Where is the constellation *Cygnus* (the swan), located? What conspicuous outline do the bright stars of this constellation form?

5. Give the size, the distance from the sun, and the periodic time of each of the planets.

6. Explain the cause of the apparent retrograde motions of the planets. What forces keep the planets in their orbits? State the number of satellites belonging to the different planets.

7. What is a nebula? Explain the difference between a resolvable and an irresolvable nebula. What causes the haze of the milky way?

8. What are the principal features of a conspicuous comet? Do all comets seen from the earth belong permanently to the solar system? How is it known that comets have very little matter? What are meteors?

9. What are the fixed stars? What is the distance to the nearest one? Do the stars retain exactly the same relative positions? What are variable stars? What are binary stars?

10. Explain the causes of eclipses of the sun and the moon, and state at what phases of the moon they occur respectively.

SCHOOL SUPERINTENDENTS AND THEIR DUTIES.

By Prof. Wm. F. Phelps, Winona.

The invitation upon which I have prepared this paper calls for "a short and comprehensive paper pointing to the duties of a superintendent to all departments of graded schools and indicating the methods of doing the work." "All this" it is further observed, "is for the benefit of young persons who have the positions in many of our schools, but with nothing more than a literary preparation. Hence, while called principals or superintendents of the schools, they are only teachers. It is not expected that the subject can be elaborated, but the board is of the opinion that such a paper as asked for would be very helpful to principals and would help school boards to understand what to expect of their principals."

Such, in the language of the invitation, is an outline of what is desired, and in order to be brief I proceed at once to a consideration of my subject.

In the first place, then, let me observe that it is most unfortunate for the interests of education that neither the masses of the people nor their servants, the boards of education, and school officers generally, have yet come to realize so fully as they ought the supreme importance of *skilled labor in the school room.* While in all the material and industrial pursuits of life, such as manufacturing, the construction and operation of railways, steam and electrical engineering, mining and kindred occupations, there is always a demand for special knowledge and technical skill, and while experts in these departments of activity are sought for and rewarded according to the intelligence, ingenuity and perfection exhibited in their work; in the school, *where the foundations of all excellence ought to be laid,* where mind is to be cultivated, habits are to be formed, and character moulded, we too frequently find inexperience and a deplorable lack of that special knowledge and professional ability which more than any and everything else ought to be the most highly valued and substantially appreciated. And nowhere in the school system is professional knowledge so needful as in the superintendency or in the principalship, where the incumbents of these offices are expected really to fulfill the functions and discharge the duties appertaining to their positions.

A superintendent or principal of a graded school should be familiar with the whole field of work to be done under his care. He ought to know more than all of his subordinates, even in their individual specialties. As a scholar, he ought to be able to teach them all. As an expert educator and as a professional adviser and director, he should be quick to note excellence or errors in organization, management, discipline, and methods of instruction and be equally able, free and gifted in offering words of approval or caution, as the case may be, and in pointing out a better way where a better way is needed. In brief, the head of a school or system of schools should be one who, by his talent, scholarship, professional acquirements, manliness of character, and practical wisdom, can command the respect of his subordinates as well as of his pupils and of the public. This is the foundation of success. This wanting, all is wanting. Hence a great step will have been gained in the administration of schools when the necessity of these qualities is distinctly recognized, and the policy of putting the right man or woman in the right place becomes the rule of action. The question of comparative cost is unworthy of attention. We must have able, skillful directors of education at whatever reasonable cost. That there is a "value received" to be looked for in the administration of schools, as well as in the operation of a railway, the management of manufactories, or any other business enterprise, is a proposition that ought to need no demonstration during the last years of this ninteenth century. So much then as an earnest word to boards of education and their constituents, the people. Gentlemen, you should exact, as the inexorable condition of your appointments to these high places of trust and administration, either proved experience and skill, or thorough special preparation. When it comes to this we shall certainly be able to secure either the one or the other. In the absence of experience, the special professional preparation will be forthcoming and your Normal schools and the pedagogical professorships in your universities will find a work to do that will be worthy of them and of the age.

But, in the second place, we are to consider the case as it too frequently presents itself in practice of "young persons who have these positions of principal or superintendent in many of our schools, but with nothing more than a literary preparation, who are really only teachers," etc.

Here it may be remarked that from a true professional standpoint as well as from the standpoint of the highest public and individual interest, it is difficult to see how a young person with nothing more than a literary preparation can become at once a truly successful teacher, much less a director, counsellor and guide of teachers, as in the case of our graded schools. As before suggested, the heads of such schools ought to be wiser, more skillful, broader and deeper, even than any of their subordinates, since they are to be the observers, critics and directors of their work. But we must take things as they are and not as they ought to be, in this discussion, and make the most of a difficult situation. My first suggestion to a young person elevated to the post of a superintendent would be to subscribe at once for two or three of the best conducted and most practical educational journals, and read them carefully and thoroughly. At the same time, purchase a copy of "Baldwin's School Management," or some better work of the kind, if it can be found, and master the experience of some of the ablest and most successful directors of schools that this country has produced. We are beginning to have an educational literature which is worthy of the nation that first made universal education a fact and a part and parcel of its governmental creed. Some of the ablest minds in this or any other land are now engrossed in the exhaustive study of education, and in its evolution as a science. A pedagogical library may no longer be looked upon as a myth. We have our Harrises, our Stanley Halls, our Soldans and a host of others who are evolving from the profoundest depths of philosophy the laws which underlie the education and training of the human faculties and the building up of human character. Next to the special preparation for his daily class work (which, by the way, no superintendent ought really to be required to do), let him explore these special fields as the sources alike of his highest inspiration and of that practical wisdom which is needful to make of himself a wise and skillful supervisor and director of education.

The next suggestion is that a young superintendent, placed as specified, should so organize and arrange his school as to make it possible for him to spend at least an hour or half-hour per day in visiting its different departments. These departments are his field of observation. Here he is to familiarize himself with the different grades of work for the success or failure of which he is presumed to be held responsible. If no other provision can be made for these visitations, let him occasionally suspend one of his own recitations, selecting a different one at different times, place his own department in charge of a trustworthy pupil, or better still, place the pupils upon their own sense of honor and self-respect, and observe the work of his assistants. Without such visitations, and the good results that flow from them, the word superintendent is a misnomer and the office is nearly worthless for any really valuable purposes. Now, one word as to the spirit, purpose and method of these systematic inspections. A wise superintendent, in all his official intercourse with his subordinates, should be kind, courteous, frank and friendly. He should not put on a repulsive air of superiority in rank. He should not be distant or dictatorial or arbitrary in his bearing. He should do nothing to embarrass either his teachers or their pupils, so far as that can be avoided. He should not find fault with or criticise his associates in the presence of their pupils. He should visit his various departments in a quiet, modest way, in order to observe the quality of the work done. He should note the spirit that pervades the pupils, whether of harmony or discord; the methods of teaching, whether superficial or thorough, interesting or otherwise; the discipline, whether of respect and love or of hatred and force. In short, whatever enters into the composition of a well ordered, efficient, successful school, or the reverse, should be noted and an entry should be quietly and unostentatiously made in a note book kept for the purpose, to be referred to in the teachers' meetings to follow. In this connection, I cannot forbear to urge that too much stress cannot be laid upon the *manner and spirit* of a superintendent, whether he be in charge of one or a hundred schools. Educational autocrats and tyrants are entirely contrary to the whole spirit and intention of American schools and American education. Such mighty men may do in Germany or Austria, but they have no proper place in the free schools of a free people, where all are equal before the law and where no germs of autocracy or aristocracy ought to be suffered to spring up, to the detriment of a great nation whose chief business is to educate itself under the benign influence of a heaven born Christianity.

The key to success in a system of schools is *harmony and co-operation* between the director and his associates.

Following the visitations, and as a correlative of the same, should come the teachers' meetings as frequently as once in each week. The object of such meetings and their necessity are too obvious to require argument. Before attempting a summary of what they should be, let me indicate what they should not be.

First — They should not degenerate into mere debating societies in which stale platitudes are rehearsed under the forms and usages of parliamentary law.

Second — They should not be occupied, with long drawn essays upon topics having little or no relation to the serious work of the school room.

Third — They should not be made an occasion for social frivolity or idle talk on everything in general and nothing in particular.

The true function of these meetings between the superintendent and his associates is to promote professional improvement, to secure unity, harmony and efficiency of action in the common work. The means by which these ends are to be attained may be summarized somewhat as follows:

First — The superintendent, drawing from the resources of his note book, may make in an impersonal and friendly way such criticisms or suggestions upon the matter, manner and methods of the teachers as his observations may have determined to be desirable. These criticisms may relate to the discipline or the general management of the school, the conduct of the recitations, the method of teaching the various subjects, or the general order and neatness of the pupils. He may have witnessed a reading lesson unprofitably taught, an exercise in geography or arithmetic unskillfully conducted; or a case of punishment unwisely administered. These and innumerable other points will in course of time come under his purview, and he should be able to suggest and illustrate methods by which better results may be reached.

Second — He may have noticed some example of marked skill in the treatment by one of the teachers of a subject. Such an example should be commented upon and commended, if not repeated before the teachers for their common benefit. Different teachers may at times be requested to conduct exercises at the meetings in branches in which they excel, when the method may be analyzed and the principles underlying it developed. In the same manner, points in discipline may be discussed, difficulties may be presented and cleared up, words of encouragement offered and the entire field of labor in the course of the year may be brought under review and discussion.

Valuable articles from educational journals may occasionally be read, commented upon, and appropriate lessons deduced therefrom.

Some work on school management may be systematically studied and canvassed at these weekly meetings in addition to the practical discussions, criticisms and suggestions that come up on the current events of the year. These meetings, in a word, may and should be made a kind of co-operative training school, in which principles and methods of teaching and government, the art of forming habits and building up character should be illustrated and enforced. In all this work the superintendent should be the earnest, skillful, courteous and accomplished leader. Let the discussions and conversations be free and unrestrained. Let the teachers, even the most inexperienced of them, be encouraged to ask questions, present difficulties and seek advice. In short, let these interviews be such as to bring out the common wisdom and experience of the entire corps of teachers, for the common benefit.

Another result of the weekly conferences ultimately, may be and should be the working out, in detail and in systematic order, of the plan of studies for the various departments. This plan will include a careful outline or syllabus of branches, with such hints for carrying on the work as may be serviceable to the teachers. It should include the divisions of the work by years, so that it would serve as a guide in respect to matter, method, time to be devoted to each study, etc. Perhaps I may best illustrate the character of such a plan by referring such as may be interested to that which has recently been revised for the schools of Winona. These plans should not be made a *Procrustean bed.* Hence the divisions of time need not be made for less than a year, but where two or more teachers are working in the same grade, monthly conferences and comparisons will suffice to enable them to carry on their work evenly and harmoniously, so as to reach the same point at the close of the year when promotions are usually made.

I cannot close these already too extended observations without urging upon young superintendents and principals the vital importance of cultivating harmonious and friendly relations, not only with their associate teachers but with the parents of their pupils and the people generally. Dignity of character, kindness, and courtesy of demeanor joined to a reasonable degree of interest in the business, religious and social affairs of the community will do wonders in strengthening the influence and increasing the usefulness of the teacher. Make it a point to cultivate the acquaintance and good will of your patrons. Be frank and communicative to your associates. They will generally be ladies, and you ought to know that nothing will stimulate and encourage a woman to do her best so much as a few words of approval or commendation when they are deserved. I have known some superintendents to freeze up by their coldness and reticence the ambition and enthusiasm of many a worthy and deserving teacher, when the display of a reasonable amount of appreciation and good sense on his part would have been of untold value to his associates and to the interests committed to his charge.

A fruitful source of improvement to superintendents and young teachers will be the visitation of other schools and intercourse with persons of ripe and varied experience. These opportunities should not be neglected. Institutes, educational conventions and similar gatherings should be always resorted to when possible, as among the most valuable sources of inspiration and professional growth. In a word, while acquiring that personal experience and power which is the basis of all success, strive to make the experience of all men and all ages tributary to your own, and you will go forth to do valiant service for humanity in the grandest field that is henceforth to be opened to human effort or to the loftiest aspiration of a chastened and worthy ambition!

Educational Works.	Publishers.
Baldwin's School Management	D. Appleton & Co.
Johonnot's Principles and Practice of Teaching	D. Appleton & Co.
Bain's Science of Education and Art of Teaching	D. Appleton & Co.
Herbert Spencer's Education	D. Appleton & Co.
Sheldon's Elementary Instruction	Charles Scribner's Sons.
Sheldon's Object Lessons	Charles Scribner's Sons.
Harvard Examination Papers — Leighton	Ginn, Heath & Co.
Yale Examination Papers — Stevens	Ginn, Heath & Co.
Aim of Industrial Education—Straight	Ginn, Heath & Co.
Pedagogical Library—G. Stanley Hall	Ginn, Heath & Co.
Extracts from Rosseau's "Emile"	Ginn, Heath & Co.

Moral and Religious Training of Children—Hall	Ginn, Heath & Co.
On the Cultivation of Memory	Eldredge & Bro.
On the Use of Words	Eldredge & Bro.
On Discipline	Eldredge & Bro.
Krusi's Life of Pestalozzi	Eldredge & Bro.
On Class Teaching	Van Antwerp, Bragg & Co.
Theory and Art of Teaching—John Swett	Harper & Brothers.
Teachers' Hand Book	A. S. Barnes & Co.

THE ART OF STUDYING.

BY WILLIAM W. FOLWELL,

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Study is to some extent an art. Some persons are skillful in it others unskillful. All can improve by thoughtfulness and resolution. The following suggestions, addressed to young students, are submitted in the hope that they will be serviceable.

1. While a student make study your business.

2. Respect the judgment of your teachers and of past generations as to what studies are useful and distrust your own inexperienced judgment and uncultivated taste. Neither choose nor refuse any studies because of a present fancy.

3. Honor your teachers and prize their instruction, but remember that they are only your guides, you are to make the journey. They are overseers; you are to perform the work.

4. Remember that all subjects are easy if taken up at the beginning and followed step by step in a proper order. Be sure, therefore, to be in your place on the opening days of terms and carefully to follow your teachers' instruction in the elements of each subject. All experienced teachers give special attention to the elements of subjects.

5. Each course of study has its advantages. Choose under advice that which you think best for you, and having chosen your course. pursue it without faltering, regarding it as the line of your duty. Resolve to master each subject in all its essential parts.

6. The mind like the body gains power and skill by use; therefore, exercise the mind incessantly. Never ask for information which you can obtain for yourself; never accept assistance in overcoming a difficulty until you are sure that you do not know how to apply your powers to it.

7. Avail yourself of the power of habit. So soon as your teachers have made for you a program of your recitations, make for yourself a program for your studies. Devote certain definite periods of time to each study and exercise. At these times fix your mind intently on the particular subject.

Have a certain place or places for studying; if you can have your own room it is a great advantage. Have a table, desk and lamp of your own and keep the same in good order. Allow no ordinary business or engagement to break in on your study hours. Do not miss the one opportunity of your life for learning a certain subject.

8. Do not spend too much time over your books.

Listless gazing upon printed pages is not study, and is worse than waste of time, for it relaxes and weakens the mental powers. When your time for study comes GO TO WORK. Master each lesson if possible the first time you go over it. Make each successive statement your own.

Review with care to deepen impressions and confirm the memory; but form the habit of doing things the first time trying, to stay done. This involves carefulness in planning.

9. Train your memory to retain such essential matters as your teachers point out. Frequent repetition aloud will be found of service. A store of fine literary passages, hymns and scripture texts is of great use to some persons, and a comfort and inspiration to all.

10. Try to understand the plan of your text-books and attempt, under the direction of your teachers, analyses of them, or some parts of them. Compare them with some other works on the same subject.

Remember that truth exists independently of all books.

11. Accustom yourself to the use of dictionaries, cyclopedias and other books of reference; and in a note book write down the references of greatest value.

12. Reciting is also an art, in which skill may be acquired by intelligent practice. In preparing lessons have in view the clear and exact statement of their truths to your teachers and classmates. To be able to make truthful and forcible statements of your knowledge is a great power, and is one of the ends of education.

13. Examination is still another art, and forms one of the most efficient means of self-education. Examinations are of interest to the teacher, but it is the pupil who is vitally concerned.

Examinations furnish the opportunities for pupils to test the value of their work, and these should be highly prized by them. If bad work has been done, if time has been misemployed, the pupil above all others needs to know it. If good work has been done, the student is entitled to know it and to take courage.

In examinations students have to do what men and women in their various callings have constantly to do, and that is suddenly to rally all their intellectual forces, recall all their available knowledge and throw them into a single effort, and—abide by the results.

The student who is able quickly to apprehend his questions, to call up on the spot all he knows about the matter and state his answers clearly and tersely, possesses a great advantage. Power of clear and ready statement, distinguishes the truly educated man.

Students will find it excellent practice to examine themselves by means of sets of questions, which may be obtained from various sources.

14. A student is under certain obligations to his teachers and schoolmates. The school is a co-operative institution, and looks to the good of all concerned. No one pupil has the right to embarrass his schoolmates by avoidable absences or tardinesses, nor to take his teachers' time in working out what he could have done for himself. It is the duty, and it is at the same time the advantage, of each pupil to do all he can to advance the progress of the class.

15. During term time keep up a healthy and vigorous tone of mind. Do not let games or amusements engross you. When they do so they cease to be recreations. Do not read novels, but reserve them for vacations. In general, limit your reading during your school years, and make it cognate to your studies. Excessive reading is mere dissipation.

16. Remember that, valuable as learning is, it is not the sole end of education. Wisdom is better than knowledge, and right conduct is the great end of all. Therefore, strive to form correct opinions about matters that come within your observation. Train your judgment constantly, and often consider what would be just and noble conduct in the circumstances about you.

LATIN.

In preparing the following paper, embracing the subjects,

1. Requisites for admission,
2. Principles and methods,
3. Topics to be studied,
4. Methods of preparation and work,
5. Questions and examination papers,
6. Text and Reference books,

the aim has been to set forth the method and material of a good preparation in Latin for the Freshman class of the University.

JABEZ BROOKS,
Professor of Greek,
and in charge of Latin.

I.—*Requisites for admission.*

1. To the Subfreshman class,
   a. Latin *Grammar* and Reader.
   b. *Cæsar*—Three books, with the geography of Gaul; life of Cæsar, and the history of his times.
   c. *Cicero*—First and second orations against Catiline, and the life of Cicero.

2. Additional for the freshman class.
   a. *Cicero*—Second and third orations against Catiline, and the oration "pro Marcello;" with the history of the Catilinian conspiracy.
   b. *Virgil*—Four books of the Æneid, with mythology, physical and political geography of Italy; the outline of Roman history to the second Punic war.

II.—*Principles and Methods.*

1. A thorough and ready knowledge of Latin Grammar—the vocal elements, elision, syllabication, euphony, quantity, inflection, the verbal elements, the principal parts of irregular verbs, the formation and composition of words, and syntax—is insisted upon as essential to an admission to the Subfreshman class. It is even more important than a mere, though fluent, reading of the quantity of Latin specified. Both acquisitions are, of course, possible to the well-instructed student. The latter will follow as an effect its cause; the former lays a solid foundation for the rapid reading of authors at the time and place when such reading should be introduced, and also makes room for the study of the history, chronology, mythology, antiquities, etc., that stand connected with the authors read, by relieving the instructor from the necessity of continually drilling his class in routine parsing. Of grammatical parsing it may be said, that it is an exercise which, however important when used in proper measure and at the beginning of a course of instruction, contributes, when confined as it usually is to mere technicalities, nothing to a practical acquaintance with the language; and when continued, as author after author is read, becomes a positive hindrance to the acquisition of the larger and better knowledge of its literature.

2. Pronunciation is taught according to the following scheme or method:

Vowels.

a. Sound of the long vowels: *a* as in *father; e* as in *prey; i* as in *machine; o* as in *no; u* as in *pool; y* as the French *u*, or the *i* above.

b. Sound of the short vowels same as the above but shortened. The long and the short vowels are identical in quality; they differ only in quantity.

Diphthongs.

Give the constituent vowels their proper sounds, and pronounce them in their order as rapidly as possible; as, *ai* and *ae* like the English word *aye* (yes); *ou* like *ow* in *owl*, or as *au* in the German; *eu* nearly as in *feud; ei* nearly as in *feint*, putting the stress on the last vowel; *oi* nearly as *oy* in *joy*; *oe* as *o-eh; u* in *ua*, *ue*, *ui*, etc., as the English *w*.

Consonants.

C is always hard, as *k; g* always hard, as in *give; j* as *y* in *year; v* approximates to the English *w; r* with a slight trill, as *per* in *perry; s* always sharp, as in *this; t* always simple, not as *sh; x* always as *ks; ng* as in *anger; nc* as in *rancor; nq* as in *banquet; qu* as in *queen; ch* like *k; th* as in *then; ph* as *f;* the other consonants as they are in English.

3. On translations.

a. Translation as to *method* is twofold or double; and consists

First, in translating the text into English;
Second, in retranslating the English into the text.

a′. With regard to the first, or direct method it may be said: *First*—That which is to be done in translating an author is to give his exact meaning in idiomatic, grammatical English. This constitutes a good translation. It should be steadily kept in view, both by the student and the instructor, that the translation of Latin into English must be made to minister to improvement in the use of the vernacular. The classics are most favorable for the attainment of this object. This makes their study desirable and valuable. Every lesson in Latin should therefore be made a lesson in English; it should aid the student in acquiring a good vocabulary, a good style, and an increased power of expression.

Second—Literal translations, as the phrase goes, should be rejected. A translation may be so literal as to be a literary monstrosity. For example: "He said himself to be about to come." "He sent soldiers who should aid the garrison." "I asked him who he might be." "They sent ambassadors to him, who should say it to be to them in mind, without any injury, to make a journey through the province, because they might have no other way; to ask that it might be permitted to them to do that with the wish of that one." "The intention is to me to go through the province." Such translations are simply barbarous, yet they are often allowed to pass without correction or even comment.

Third—In translating, the sentence may be taken up in the *grammatical order* of its parts, as, to state it in a general way, first the subject, with the words thereto belonging, if any, then the verb, then the word or words governed by the verb, and the preposition, if any, with the words depending on it. Or the sentence may be taken up in the *natural order* of the words as they occur in the text, and translated word by word, giving to each word its precise and generally its radical meaning; when the translation of the sentence is finished after this method, reconstruct it so as to form correct and idiomatic English, modifying the meaning of such words as may be necessary to do this. Words have a radical meaning, and a meaning *in loco*, or the one determined by its connections. It is the latter that is to be given in translating. The two meanings will often be found coincident in the same word. The employment of this method of translating is strongly advised. These are some of its advantages. It gives the author's order of thought and style of expression, and will therefore open out to the student general constructions and those which would otherwise be obscure and difficult, and especially those which are peculiar to the author; it enables the student to conform his style to that of the author, and thus increases his power of expression; it places the idioms of the Latin and those of the English over against each other, by a comparison of which and a study of their resemblances and differences, the student is aided in gaining a knowledge of general and of particular grammar; it is the only method which makes a facile reading of new authors possible, and imparts gradually to the student the power of reading fluently at sight.

b′. With regard to the second, or reverse, method, it may be said:

First — It should be made from the student's own version or translation, after all errors have been corrected by the instructor. This translation has been conformed to the definition of a good translation given in *a′* above. Proceed first by words and phrases, that the student may be taught how to express detached ideas; then, by the short and easy sentences in it; then, by increasing the length of the sentences; then, by the reproduction of the entire sentence or passage translated. This method of retranslation can be employed in every stage of study, suiting the exercise to the student's progress and proficiency. The exercise can readily be extended, or turned, into the composition of sentences, and the writing of connected discourse.

Second — It should be made as soon as possible after the first, or direct, translation, while the original is yet remembered by the student; or, before making the second translation he may reread the original. The instructor need not fear that this will degenerate into a mere copying of the text. Under the most favorable conditions the student will have to summon his best recollections of the text, and this very effort will aid him in fixing in his memory the words, phrases, and sentences, with their peculiar constructions. Should his recollection fail him altogether, let him at once refer to the text; this is preferable to using the dictionary.

Third— The student, as he compares his retranslation with the original, is furnished with an excellent exercise in orthography, inflection and syntax; in the composition and derivation of words, and synonymy; and also in rhetoric, for the comparison will aid him in learning the difference between idiomatic and syntactic forms, and between the literal and the figurative meaning of words, and in discovering why the peculiar forms of expression in the original should be preferred to those of any other.

b. Translation as to *form* may be oral, or written.

a′. Oral translation is the form most commonly required of the student. The reasons which justify oral instruction in other subjects taught in the schools are good also for oral instruction and translations in Latin.

b′. Written translation is, however, urged upon the attention of instructors as an exercise of great value. When properly done it is preferable to oral translation for forming a good style, and for increasing the powers of expression in the vernacular. To speak well, one must write much. The best exercise in English composition for a young writer is to translate copiously into it. In oral translation the student pushes rapidly on to catch or to retain the sense of the passage he is translating, oftentimes irregardful of his phraseology, and brings out a translation which, if transferred to paper, or to the blackboard, just as he gave it, would be as amusing in thought as it is absurd in expression. Oral translations as ordinarily given, if taken down in full and examined, will be found to be false, both in construction and in rhetoric. Even the best oral translators may be improved by this test. It is strongly advised, therefore, that written translations be often prepared by the class in a book for that purpose, and that they be placed upon the blackboard; then let all corrections be made before the class, with the discussions upon them, embracing the choice of words, their different acceptations, and their idiomatic arrangement, also, construction and the logical connection of ideas. In short, let the instructor make of it an exercise in all that gives precision, force, clearness, elegance and harmony to composition, and that improves the taste and exercises the judgment.

c. *Translation at sight* is advised against in the early part of the Latin course. A student can translate at sight only what he already knows. When the student has acquired a large vocabulary, and good habits of study, then the practice may be introduced. Otherwise it is a vice under the guise of a virtue. Prelection by the instructor is, however, an excellent plan. Let the instructor take the lesson assigned for the next day, and begin the translation of it before the class, either in the grammatical, or in the natural order of the words, making such explanatory remarks upon the words as they occur — their nature, inflections, roots, derivation and meaning, upon the phrases and sentences — their force and construction, their elegance and harmony, as may elucidate the passage, and at the same time may suggest to the class, as by a pattern, methods of discriminating, thorough, and systematic study and investigation.

d. That portion of the text which the student translates should be *pronounced* by him *twice:*

First, before he translates it, for the purpose of enabling him to unravel, what oftentimes seems to him, a tangled arrangement of the words in the sentence, and to construe the sentence into good, idiomatic English.

Second, after he has translated it, for the purpose of exercising himself in placing mentally the English upon the Latin as he pronounces it. As he pronounces the Latin he should see the English of it.

e. Reviews.

Ground once traversed should be made familiar by frequent resurvey. All gains should be firmly secured. Frequent reviews of the work done contribute much to this object. They are a condition of advancing and accurate scholarship.

4. On Grammar.

A mastery of the essentials of Latin Grammar, enumerated in II, 1, above, should be gained in the early stages of Latin study. It should be secured there once for all; for, generally, if it is not secured there, it will never be. This mastery cannot be attained by the mere study of grammar. The language is the repertory of grammatical principles. All the grammatical forms and constructions are found in the printed page. The reading of Latin, therefore, must be made an instrument in the instructor's hand for bringing them out. In doing this, the chief facts, and forms, and terms of grammar must receive attention, each word and sentence of the Latin read must be used as a grammatical praxis, until, by sufficient repetition and systematic review, the student attains a ready analysis of forms, and a mastery of the leading rules of syntax. In achieving this, it is not too much to say, that all the inflectional forms of the language should be so familiar to the student by the end of his first year's study, that he can name and locate each inflectioned word at sight. Studied thus, grammar becomes a means, not an end, and is learned, not by an act of the memory merely, but by an act of judgment; and Latin is read, not to illustrate principles of grammar already memorized, but to evolve their laws by induction.

With this preparation, though but a small amount of Latin has been read, the student can proceed to an intelligent reading of authors, and, with all this necessary detail behind him, which becomes mere drudgery if postponed further on in the course, he can advance in his reading to the sudy of the higher principles of form and syntax, of history, mythology, antiquities, etc., —in short, of everything, in its logical order, that makes for a thorough knowledge of the language and its literature, and for culture.

III. *Topics to be studied.*

1. In *Grammar* in conjunction with the Reader.
    a. *Orthography*—The alphabet, its classification, pronunciation, syllabication, quantity, accentuation.
    b. *Etymology*—All the coarse print in such a treatise as Harkness, including as much of the subject of word-formation as is contained in section 1, chap. 6, of Harkness' Revised Grammar.
    c. *Syntax*—The coarsest print only at first.

2. In the use of the *Reader.*
    - a. *Pronunciation* must be constantly practiced, and carefully criticised.
    - b. *Translation into English.*

      The translation of Latin must be made to contribute to the acquisition of a good vocabulary and a good style of expression. Cf. II., 3, a′ above.
    - c. *Translation into Latin.*

      Cf. II., 3, b′ above.

3. *With Cæsar.*
    - a. The *life* of Cæsar, and the history of his times, as far as may be necessary to the understanding of his character and career.
    - b. The *geography* of Gaul and Italy, the general outlines of the country, political divisions, chief physical features, location of all the tribes and places mentioned in the text, the course of Cæsar's marches.
    - c. The *organization* of the Roman army, method of reckoning time, measures of weight, capacity, value, distance, etc., mentioned in the text.
    - d. *Translation into English.*

      Cf. II., 3, a′ above.
    - e. *Translation into Latin.*

      Cf. II, 3, b′ above.
    - f. *Review of the Grammar.*

      In this review, systematically conducted, the finer print should be taken up, and especial attention given to the subjunctive mode.

4. *With Cicero.*
    - a. The *life* of Cicero — the history of his times — his contemporaries.
    - b. The *history* of the Catilinian conspiracy.
    - c. The *antiquities* connected with the text — as, the Roman Senate, its constitution, powers, duties, place of assembly, etc.; the duties and prerogatives of the consuls, their number, manner of election, eligibility of candidates, duration of office, etc.
    - d. The *rhetorical* features of the orations should be critically studied, the figures of speech, rhetorical devices, etc.

e. The *composition of words* should here receive especial attention, together with their radical and figurative meanings.

f. *Translation into English.*

The student should be taught to make his trans lation, both in diction and style, worthy of the finished compositions which he is translating.

g. *Translation into Latin.*

This exercise, pursued as recommended above, may be extended into the composition of short and easy sentences first, and then of longer and more difficult ones, all based on the text.

h. *Pronunciation of the text.*

This should be done invariably.

Cf. II, 3, d.

5 *With Virgil.*

a. The *life* of Virgil—the history of his times—his writings—his contemporaries.

b. The *geography*, antiquities. biographies and mythology connected with the text.

c. The *prosody* of the Æneid.

d. The *composition* of words.

e. *Translation into Euglish.*

As far as it can be done conformably with good English make the translation Virgilian. The observance of the suggestions in II, a, 3, 3d, on the *natural order* in translating, will aid in this.

f. *Pronunciation of the Text.*

Carefully observe the laws of its prosody in doing this.

IV. *Methods of Preparation and Work.*

The eye, the ear and the voice must be cultivated.

1. *Pronunciation of Text.*

a. In the disconnected sentences of the Reader.

b. In the connected sentences of Cæsar, pronouncing occasionally extended passages, with strict regard to a proper inflection of the voice.

c. In the orations of Cicero, portions of the text should be memorized, and declamations from the text may be delivered with profit.

2. *Use of the Blackboard*, habitually
   - a. For paradigms.
   - b. For writing the text from dictation.
   - c. For writing the translation from text or from the dictation of the text.
   - d. The retranslation of English into Latin.
   - e. In composition exercises.
3. *Conversational exercises.*

   These, based upon the text, should be devised by the instructor and employed to a limited extent.
4. *Reviews.*

   Daily reviews of previous lessons; weekly reviews also. There is no danger of too much reviewing. It makes for the mastery of the language and good scholarship.
5. *Analyses of sentences.*

   These should be frequently made, and of extended passages also.
6. *Translations.*

   These, whether done according to the direct, or the reverse, method, should be frequently written upon the blackboard, and treated as suggested in II, 3, b, b′, and II, 3, a, b′, 1st.

V. *Questions and Examination Papers.*

The following questions and sample examination papers will indicate further, and more in detail, what will be expected of the candidate for examination at the university.

1. *In Grammar and Reader.*

1. Classify the consonants.
2. Give the gender of each of the following nouns, and the rule for it,—motus, Ægyptus, ficus, ager, rex, lex, passer, ratio, aetas, mus, tellus, manus, res, dies.
3. Decline passer, nubes, bellum, carmen, puer, leo, cornu, facies, pater-familias, jus-jurandum, aliquis, prudentior, hic, is, quis, quidam, tu, ego, totus, duo.
4. Decline together, hic bonus homo, omnis annus, fortior dux, creber hiems.

5. Compare ingens, levis, facilis, posterus, benevolus, acer, senex, parvus, bonus, altus.
6. Form and compare adverbs from altus, prudens, brevis.
7. Write out the first twenty cardinals, ordinals and distributives.
8. Give a complete synopsis of the verb sum.
9. Give a synopsis of the subjunctive of amo, active and passive; inflect the future indicative and the present subjunctive of rego, active and passive.
10. Inflect the imperative of moneo, active and passive; give all the infinitives and participles of audio.
11. Write the perfects and supines of reperio, maneo, perfundo, cado, fero.
12. Give the principal parts of vinco, fugio, capio, eo, volo, possum, video.
13. Give all the infinitives and participles of caedo, moveo, cognosco, facio, tollo, hortor, audeo.
14. Locate the following forms: amato, rogatum, juberent, capient, facient, pati, gavisus, sprevistis, audirere.
15. Write out three adverbs of place; three adverbs of time; three adverbs of manner; three adverbs of cause.
16. Write out three conditional conjunctions; three final conjunctions; three interrogative conjunctions.
17. What endings denote diminutiveness? descent? fullness? the beginning of an action? desire for action?
18. What prepositions are used with the ablative? what, with either accusative or ablative, and with what difference of signification?
19. What prepositions are in composition followed by the dative?
20. By what cases may price be expressed? place? time? agency?
21. What classes of adjectives are construed with an ablative case?
22. How may purpose be expressed? how condition contrary to reality?
23. Give rules for the use of mood and tense in indirect discourse.

24. State the construction of the infinitive as subject and as object.
25. Define the gerund and the gerundive; to what laws of construction are they subject?
26. Give as many English words as you can, that are connected by derivation with the following: brevis, dico, erratio, horreo, jaceo, juro, negatio, surdus, solvo, adhæreo, admitto, adoro, candidus, cogito, pono, nascor, vetus, tribulum, crux, calx, omen.

2. *In Cœsar.*

1. *Translate*—"Cæsar, quod memora tenebat L. Cassium consulem occisum, exercitumque ejus ab Helvetiis pulsum et sub jugum missum, concedendum non putabat; neque homines inimico animo, data facultate per provinciam itineris faciundi, temperaturos ab injuria et maleficio existimabat. Tamen, ut spatium intercedere posset, dum milites quos imperaverat convenirent, legatio respondit diem se ad deliberandum sumpturum; si quod vellent, ad Id. Apr. reverterentur."

—Book I. ch. 7.

(a.) When and under what circumstances did the incident referred to take place?
(b.) Explain the meaning of "sub jugum missum."
(c.) Locate the district referred to as "provinciam."
(d.) What date is meant by Idus Aprilis? Name the other divisions of the month, and state how time was reckoned from them:

2. *Translate*—"Interea ea legione, quam secum habebat, militibusque qui ex provincia convenerant, a lacu Lemano, qui fines Sequanorum ab Helvetiis dividit, milia passuum decem novem, murum in altitudinem pedum sedecim, fossamque perducit."

—Book I., ch. 8.

(a.) Locate Lemanus. What is its modern name?
(b.) Trace the course of the Rhodanus. What is its modern name?
(c.) Locate Mons Jura, the territories of the Sequani and Helvetii.
(d.) Describe the Roman Legion.

3. *Translate*—"Quamobrem placuit ei, ut ad Ariovistum legatos mitteret, qui ab eo postularent, uti aliquem locum medium utriusque conlo-quio diligeret; velle sese de republica et summis

utriusque rebus cum eo agere. Ei legationi Ariovistus respondit: 'Si quid ipsi a Cæsare opus esset, sese ad eum venturum fuisse; si quid ille se velit, illum ad se venire oportere. Præterea se neque sine exercitu in eas partes Galliae venire audere, quas Cæsar possideret, neque exercitum sine magno commeatu atque molimento in unum locum contrahere posse. Sibi auten mirum videre, quid in sua Gallia, quam bello vicisset, aut Cæsari aut omnino populo Romano negotii esset.' "

—Book I, ch. 34.

(a.) Who was Ariovistus?
(b.) To whom does ei in line first refer?
(c.) What was the occasion of this embassy?
(d.) Explain all subjunctives.

4. *Translate* — "Hoc proelio trans Rhenum nuntiato, Suevi, qui ad ripas Rheni venerant, domum reverti coeperunt; quos Ubii, qui proximi Rhenum incolunt, perterritos senserunt; insecuti, magnum ex his numerum occiderunt. Cæsar una aestate duobus maximis bellis confectis, maturius paulo quam tempus anni postulabat, in hiberna in Sequanos exercitum deduxit; hibernis Labienum praeposuit; ipse in citeriorem Galliam ad conventus agendos profectus est."

—Book I, ch. 54.

(a.) Trace the course of the Rhenus. What is its modern name?
(b.) Locate the Suevi.
(c.) Explain what is meant by "ad conventus agendos."
(d.) What district is meant by "citeriorem Galliam?"
(e.) Give the principal parts of all the verbs in the chapter.
(f.) Explain all the ablatives.

5. *Translate* — "Ea re constituta, secunda vigilia magno cum strepitu ac tumultu castris egressi, nullo certo ordine neque imperio, cum sibi quisque primum itineris locum peteret et domum pervenire properaret, fecerunt ut consilimis fugae profectio videretur. Hac re statim Cæsar per speculatores cognita, insidias veritus, quod qua de causa discederent nondum perspexerat, exercitum equitatumque castris continuit. Prima luce, confirmata re ab exploratibus, omnem equitatum qui novissimum agmen moraretur praemisit. His Q. Pedium et L. Aurunculeium Cottam legatos præfecit; T. Labienum legatum cum legionibus tribus subsequi jussit."

—Book II, ch. 11.

(a.) Describe the vigiliæ.
(b.) Explain each subjunctive.
(c.) What is the subject of fecerunt, and to whom does it refer?

6. *Translate* "Ad hæc Cæsar respondit: Se magis consuetudine sua quam merito eorum civitatem conservaturum; se prius quam murum aries attigisset se dedidissent; sed deditiones nullam esse condicionem nisi armis traditis. Se id quod in Nerviis fecisset facturum, finitumisque imperaturum, ne quam deditici is populi Romani injuriam inferrent. Re nuntiata ad suos, quæ imperarentur facere dixerunt. Armorum magna multitudine de muro in fossam, quæ erat ante oppidum, jacta, sic ut prope summam muri aggerisque altitudmem acervi armorum adæquarent, et tamen circiter parte tertia, ut postea perspectum est, celata atque in oppido retenta, portis patefactis, eo die pace sunt usi."
—Book II., ch. 32.

(a.) Change whatever indirect discourse there may be in the chapter into the form of direct discourse (in Latin).
(b.) Distinguish between murus, moenia, paries.

7. *Translate*—"Namque ipsorum naves ad hunc modum factæ armataeque erant; carinæ aliquanto planiores quam nostrarum navium, quo facilius vada ac decessum æstus excipere possent; proræ admodum erectæ, atque item puppes ad magnitudinem fluctuum tempestatumque adcommodatæ; naves totæ factæ ex robore ad quamvis vim et contumeliam perferendam; transtra pedalibus in altitudinem trabibus confixa clavis ferreis digiti pollicis crassitudine; ancoræ pro funibus ferreis catenis revinctæ; pelles pro velis alutæque tenuiter confectæ, hæ sivi propter lini inopiam atque ejus usus inscientiam, sivi eo (quod est magis verisimile) quod tantas tempestates Oceani tantosque impetus ventorum sustineri ac tanta onera navium regi velis non satis commode posse arbitrabantur. Cum his navibus nostræ classi ejusmodi congressus erat, ut una celeritate et pulsu remorum præstaret; reliqua pro loci natura, pro vi tempestatum, illis essent aptiora et accommodatiora. Neque enim his nostræ rostro nocere poterant-tanta in iis erat firmitudo—neque propter altitudinem facile telum adiciebatur, et eadem de causa minus commode copulis continebantur. Accedebat ut, cum sævire ventus cœpisset, et se vento dedissent, et tempestatem ferrent facilius, et in vadis consisterent tutius, et ab æstu relictæ nihil saxa et

cautes timerent; quarum rerum omnium nostris navibus casus erat extimescendus."

—Book III., ch. 13.

(a.) What people are here referred to?

(b.) What is the modern name of the sea here characterized as stormy.

8. *Write* in *Latin* and translate.

(a.) A declarative sentence.

(b.) An interrogative sentence.

(c.) A declarative sentence containing an infinitive as subject.

(d.) A declarative sentence containing an infinitive as object.

(e.) A declarative sentence containing a purpose clause.

(f.) A conditional period assuming the condition as real.

(g.) A sentence containing an ablative absolute.

(h.) A sentence illustrating indirect discourse.

9. State the rules for the arrangement of *words* in the sentence; of *clauses* in complex and in compound sentences.

10. (a.) How did Cæsar come to have command in Gaul?

(b.) How long did his command last?

(c.) Recount the circumstances of Cæsar's death.

(d.) Give a short sketch of the character of Cæsar.

11. *Translate* into Latin.

(a.) Into how many parts is Gaul divided, and who inhabit them?

(b.) Who were the most warlike of all the Gauls, and where did they dwell?

(c.) Cæsar sent him to occupy the hill before the enemy reached it.

(d.) Cæsar replied that he did not think it safe to allow an armed foe to pass through the province.

(e.) They came to Cæsar to congratulate him.

(f.) They formed a plan to capture the camp.

4. *With Cicero.*

1. *Translate*—"Habemus enim hujusce modi senatus consultum, verum inclusum in tabulis, tamquam in vagina reconditum, quo ex senatus consulto confestim te interfectum esse, Catilina, convenit. Vivis, et vivis non ad deponendam, sed ad confirm-

andam audaciam. Cupio, patres conscripti, me esse clementem; cupio in tantis rei publicæ periculis me non dissolutum videri; sed jam me ipse inertiæ nequitiæque condemno. Castra sunt in Italia contra populum Romanum in Etruriæ faucibus conlocata: crescit in dies singulos hostium numerus; eorum antem castrorum imperatorem ducemque hostium intra mœnia atque adeo in senatu videmus, intestinam aliquam cotidie perniciam rei publicæ molientem."

—Orat. I., ch. 2.

(a.) Explain the origin of the expression "Patres conscripti."
(b.) What is the subject of convenit?
(c.) What is the object of cupio?

1. *Translate*—"Etenim quid est, Catilina, quod jam amplius expectes, si neque nox tenebris obscurare cœtus nefarios, nec privata domus parietibus continere voces conjurationes tuæ potest? si inlustrantur, si erumpunt omnia? Muta jam istam mentem: mihi crede, obliviscere cœdis atque incendiorum. Teneris undique: luce sunt clariora nobis tua consilia omnia, quæ jam mecum licet recognoscas. Meminestine me ante diem XII. Kalendas Novembris dicere in senatu, fore in armis certo die—qui dies futurus esset ante diem VI. Kal. Novembris—C. Manlium, audaciæ satel litem atque administrum tuæ?"

—Orat. I., ch. 3.

(a.) Account for the mode of expectes, recognoscas.
(b.) Comment on the use of iste by Cicero.
(c.) What peculiarity in the use of tense is illustrated by dicere?
(d.) Distinguish between scelestus, nefarius, impius.
(e.) Analyze the clause "quæ jam mecum licet recognoscas."

3. *Translate*—"Fuisti igitur apud Laecam illa nocte, Catilina; distribuisti partis Italiae; statuisti quo quemque profiscisci placeret; delegisti quos Romae relinqueres, quos tecum educeres; descripsisti urbis partes ad incendia; confirmasti te ipsum jam esse exiturum; dixisti paulum tibi esse etiam nunc morae, quod ego viverem. Reperti sunt duo equites Romani, qui te ista cura liberarent, et sese illa ipsa nocte paulo ante lucem me in meo lectulo interfecturos esse pollicerentur. Haec ego omnia, vixdum etiam coetu vestro dimisso, comperi; domum meam majoribus praesidiis munivi atque firmavi; exclusi eos quos tu ad me

salutatum miseras, cum ille ipsi venissent, quos ego jam multis ac summis viris ad me id temporis venturos esse praedixeram."

—Orat. I, ch. 4.

(a.) How was Cicero apprised of the intention of his visitors?

(b.) What is the derivation of coetus, praesidiis?

4. *Translate*—"Quod ego praetermitto et facile patior sileri, ne in hac civitate tanti facinoris immanitas aut exstitisse aut non vindicata esse videatur. Praetermitto ruinas fortunarem tuarum, quas omnis impendere tibi proximis Idibus senties. Ad illa venio, qua non ad puratam ignominiam vitiorum tuorum, non ad domesticam tuam difficultatem ac turpitudinem, sed ad summam rem publicam atque ad omnium nostrum vitam salutemque pertinent."

—Orat. I, ch. 6.

(a.) Explain the subjunctive "videatur."

(b.) What crime is referred to by "facinoris"?

(c.) What date is referred to by "proximis Idibus?"

(d.) Express in Latin the "twenty-first of December."

(e.) Distinguish between "malificium, facinus, flagitium, nefas.

5. *Translate*—"Hisce omnibus, Catilina, cum summa rei pubicae salute, cum tua peste ac pernicie, cumque eorum exitio que se tecum omni scelere parricidioque junxerent, proficiscere ad impium bellum ac nefarium. Tu, Jupiter, qui isdem quibus haec urbs auspiciis es constitutus, quem statorem hujus urbis atque imperi vere nomina mus hunc et hujus socios a tuis ceterisque templis, a tectis urbis ac moenibus, a vita fortunisque civium omnium arcebis, et homines bonorum inimicos, hostes patriae, latrones Italiae, scelerum foedere inter se ac nefaria societate conjunctos, aeternis suppliciis vivos mortuosque mactabis."

—Orat. I, ch. 13.

(a.) What omens are referred to?

(b.) What is the derivation of exitio, of parricidio, of nefarium, auspiciis?

(c.) Under what circumstances was the name "Stator" first given to Jupiter?

(d.) What were the prerogatives of Jupiter among the celestials?

(e.) Distinguish between adversarius, hostis, inimicus.

6. *Translate*—"Abiit, excessit, evasit, erupit. Nulla jam pernicies a monstro illo atque prodigio moenibus ipsis intra moenia comparabitur. Atque hunc quidem unum hujus belli domestici ducem sine controversia vicimus. Non enim jam inter latera nostra sica illa versabitur; non in campo, non in foro, non in curia, non denique intra domesticos parietes pertimescemus."

—Orat. II, ch. I.

(a.) Locate the "campus," "the forum."

(b.) How was the place of assembly of the Senate determined?

(c.) What particular act of atrocity on the part of the conspirators is alluded to in the expression, "inter domesticos parietes?"

7. *Translate*—"Hoc vero quis ferre possit, inertis homines fortissimis viris insidiari, stultissimos prudentissimis, ebriosus sobriis, dormientes vigilantibus? qui mihi accubantes in conviviis, complexi mulieres impudicas, vino languide, conferti cibo, sertis redimiti, unguentis obliti, debilitati stupris, eructant sermonibus suis caedem bonorum atque urbis incendia."

—Orat. II, ch. 5.

(a.) Account for mode and tense of possit.

(b.) Account for case of mihi.

8. *Translate*—Itaque, at comperi legatos Allobrogum, belli Transalpini et tumsultus Gallici excitanda causa, a P. Lentulo esse sollicitatos, eosque in Galliam ad suos civis, eodemque itinere cum litteris mandatisque ad Catilinam esse missos, comitemque eis adjunctum esse T. Volturcium, atque huic ad Catilinam esse datas litteras, facultatem mihi oblatam putavi, ut—quod erat difficillimum, quodque ego semper optabam ab diis immortalibus—tota res non solum a me, sed etiam a senatu et a vobis manifesto deprehenderetur."

—Orat. III, ch. 2.

(a.) Who were the Allobroges? Who, P. Lentulus?

9. *Translate*—"Hæc omnia indices detulerunt, rei confessi sunt; vos multis jam judiciis judacavistis; rimum, quod mihi gratias egistis singularibus verbis, et mea virtute atque diligentia, perditorum hominum conjurationem esse patefactam decrevistis; deinde quod P. Lentulum se abdicare prætura coegistis; tum quod eum et ceteros de quibus judicastis in custodiam dandos censuistis; maximeque, quod me nomine supplicationem decrevistis, qui honos togato habitus ante me est nemini; postremo,

hesterno die præmia legatis Allobrogum Titoque Vulturcio dedistis amplissima."

— Orat. IV, ch. 3.

(a.) What were the duties of the prætor? Who were eligible candidates for the office?

10. (a.) State the time when, the place where, and the circumstances under which each of these orations was delivered; also the purpose for which it was delivered, and the result.

(b.) Name the orations of Cicero, and the circumstances of their delivery.

(c.) Discuss the consulship.

5. *With Virgil.*

1. Give a short sketch of the life of Virgil, mentioning his principal works, and some of his most famous contemporaries.
2. Why is this poem called the Æneid? What was the author's purpose in writing it? What did he take as his model?
3. Trace the voyage of Æneas from the time he left Troy until he met Dido. State also what caused him to leave each station.
4. How long did Æneas stay in Africa? What caused him to depart?
5. What divinities take most active part in the story? How was each disposed toward the Trojans, and why?
6. Give the parentage, consort (if any), offices, method of representation in painting or sculpture, and some of the commonest epithets of each of the following divinities,—Jupiter, Apollo, Venus, Minerva, Cupid, Diana.
7. Name the muses, and give the sphere of each.
8. Who were Polydorus, Laocoon, Celaeno, Andromache, Enceladus, Polyphemus, Achilles, Cassandra, the Sibyl?
9. Locate Delos — to whom sacred? Paros — famous for what? Dictæa Arva — why so called? Actium — famous for what? Dodona — sacred to whom?

10. What kind of verse is used in the Æneid? of what kind of feet composed? What American poet has used the same kind of verse most successfully? Name a poem.

11. What is a Cæsura? What a feminine Cæsura? What is meant by the arsis and the thesis of a foot?

12. *Translate*—"Mene incepto desistere victam,
nec posse Italia Teucrorum avertere regem?
Quippe vetor fatis. Pallasne exurere classem.
Argivom atque ipsos potent submergere ponto,
unius ob noxam et furias Aiacis Oilei?
Ipsa, Jovis rapidum jaculata e nubibus ignem,
disjecitque rates evertitque æquora ventis,
illum expirantem transfixo pectore flammas
turbine correpuit scopuloque infixit acuto.
Ast ego, quæ divom incedo regina, Jovisque,
et soror et conjunx, una cum gente tot annos
bella gero! Et quisquam numen Junonis adoret
præterea, aut supplex aris imponet honorem?"
—Book I, v. 37–49.

(a.) Why is desistere infinitive?
(b.) Who is meant by regem?
(c.) Who was Pallas? By what other names known?
(d.) On what occasion did the storm referred to occur?
(e.) Why was Juno hostile to the Trojans?
(f.) Mark the scansion of the second and third lines.

13. *Translate*—
"Hic vero ingentam pugnam, ceu cetera nusquam
bella forent, nulli tota morerentur in urbe.
Sic Martem indomitum, Danaosque ad tecta ruentes
cernimus, obessumque acta testidune limen.
Hærent parietibus scalæ, postisque sub ipsos
nituntur gradibus, clipeosque ad tela sinistris
protecti objiciunt, prensant fastigia dextris."
—Book II, v. 437–444.

(a.) Account for mode and tense of forent.
(b.) What is the primary meaning of testudo? Describe the testudo as here referred to.
(c.) What figure of speech is illustrated in the use of the word martem?
(d.) Who were the Danaoi and by what other names are they called in the Æneid?
(e.) Mark the scansion of the first four lines.

14. *Translate* —

"Hos ego degrediens lacrimis adfabar obortis:
'Vivite felices, quibus est fortuna peracta
jam sua; nos alia ex aliis in fata vocamur.
Vobis parta quies; nullum maris aequor arandum,
arva neque Ausoniæ semper cedentia retro
quaerenda; effigiem Xanthi Trojamque videtis,
quam vestræ fecere manus; melioribus, opto,
auspiciis, et quæ fuerit minus obvia Grais.' "

—Book III, v. 492-499.

(a.) Explain the meaning of melioribus auspiciis.
(b.) What is the construction of Grais?
(c.) What land is meant by Ausonia, and why so called?
(e.) What is meant by the expression semper cedentia retro?

15. *Translate* —

" 'Nate dea, portes hoc sub casu ducere somnos,
nec, quæ te circum stent deinde pericula, cernis,
demens, nec Zephyros audis spirare secundos?
Illa dolos dirumque nefas in pectore versat,
certa mori, varioque irarum fluctuat aestu.' "

—Book IV, v. 560-565.

(a.) What is the construction of dea?
(b.) Who is meant by dea?

16 State the subject of each of the four books at length.

VI. *Text and Reference Books.*

1. *Text Books.*

Grammar — Harkness' Revised Edition, or Allen and Greenough's.
Reader — Harkness, Leighton.
Cæsar — Harkness, Chase and Stuart.
Cicero — Chase and Stuart, Allen and Greenough.
History of Rome — Liddell.

2. Books of reference and information.

Keightley's Mythology.
Smith's Smaller Classical Dictionary of Biography, Mythology and Geography.
Smith's School Dictionary of Greek and Roman Antiquities.
Ginn & Heath's Classical Atlas, or the Student's Atlas of Historical and Classical Geography — Putnam & Sons.

THE STUDY OF THE SCIENCES.

BY PROFESSOR C. W. HALL.

Whether the labors of the scientist be for the advancement of pure science and a search for truth "for truth's own sake," or whether his aim be to advance mankind in comfort and happiness, the object of science studies in our public schools is to train pupils to observe the phenomena of nature and to reason from their observations. With such a training the intimate relation between the phenomena of nature and the comfort and happiness of man is quickly seen and the dissemination of a knowledge of the sciences is sought. But the distinction is not always made between the gathering of information merely and the study of the sciences as a discipline; and probably so long as material for illustration is not at hand and teachers prefer to amuse rather than discipline their pupils, the former will be the chief end sought. The enumeration of the facts and phenomena of nature is no more an education than memorizing the facts of mythology, biography and history is classical discipline. No greater mistake can be made than to suppose that a class, having skimmed over three or four elementary text-books in science, has taken a scientific course of study.

The first lessons in science should bear upon the facts of daily life. Lectures should be avoided as lectures; as object lessons they should always be accompanied by the objects themselves. Never let the statement of a fact take the place of an opportunity to observe. If the pupil ask the difference between a piece of calcite and one of quartz, give him typical specimens to look at, to feel, to test, that he may satisfy himself. Thus is one more victory won, one more bit added both to capacity and character. With exercises thus performed the two objects of their education are attained and the pupils are not turned out into the world defenseless and a prey to those events which they ought to control to their own success. As our country grows older and competition becomes sharper there will be an increasing need for skill and invention; training our youth into this scientific habit of thinking and working will materially help this need.

An original investigator, that is, one who is searching for truth in any given direction and holding it up and explaining it to us, first observes all the facts that are within his reach bearing upon the object of his particular search. These facts he brings together, places side by side, tests and rearranges to determine how they look and act in different associations. This testing and rearrangement is experiment. Then according to their particular relations or affinities he groups them, or, if we may borrow a figure of speech, he ties up into bundles all similar facts, labels them and places the bundles which are general propositions where they are ready for use. This is his classification. And here the investigator has reached the difficult part of his labors. Placing his problem beside the history of the natural sciences Linnæus is reached; fine discriminations, nice adjustments, and the weighing out of exact justice are yet to come. That long and painstaking search lies before this investigator, which is to show the world of what the object is made, how it is made, what are its processes and what its relations to other objects in the material of which it is built up, wherein its construction resembles, whether and in what particular its processes are like or unlike those of other objects or forces which neighbor it, what have been the past and what are the present results of its being in the world or in the universe—in short, the whole story of its origin, its existence, its possibilities, its contingencies. The search involves much reasoning from observation as well as protracted observation itself.

True, it is very difficult at times to obtain illustrative material. But that material must be had or the end in view cannot be reached. There is no branch of the natural or physical sciences in which this is not especially true. The time would far better be spent in the languages or mathematics than in the sciences with the book alone. *To study things is the only way to study science.* Only those topics should be taken up which treat of objects within reach of the class. Teachers should not allow a single lesson to be passed over which is not thoroughly understood. Avoid the treadmill and bear constantly in mind these three essentials,—and they are essentials—because if any one be wanting the value of scientific studies as a means of discipline and culture is lost:

1. Patience to perform, skill to manipulate, and facility to make clear to the class not only each single experiment but the whole series of experiments used to illustrate a subject;

2. A careful and comprehensive outlining of all the details of the topic, a minute analysis of every part of the experiment or illustration before generalizations are made or principles stated;

3. Absolute and exact truth must be adhered to in every stage of the work. Facts must be stated just as they are, phenomena must be described exactly as they occur, and relations must be given without the slightest impress of personal bias. The scientific investigator who cannot see things as they are, or is found misrepresenting or concealing, at once finds himself without authority among men of letters. If the teacher has not patience, skill and resource, if he be not rigidly truthful in thought, as a teacher of the natural or physical sciences, he will certainly lack success.

The first and most natural work to take up in a course of scientific studies is a simple and systematic description of the familiar phenomena and surface features of the locality. This serves to train pupils into habits of observation and in scientific modes of thought and inquiry among every day phenomena.

To illustrate: Study the history of water in its circuit of evaporation, condensation, fall and flow; its characteristics as a solid, and as a gas as well as a fluid; how it modifies the earth's surface by inundations, erosion and its solvent and transporting powers; and how by its abundance or its lack it marks the limits of trees and plants and directs whither animals shall roam for food.

This much at least of the course should be completed before the high school is reached. Botany, the best of all the sciences for developing in pupils the habit of seeing everything and making fine discriminations, cannot be begun too soon nor continued too long. There are reasons why zoology should follow botany and not precede it, but whenever they are begun and "finished" neither one should be allowed to drop out of the daily life of the pupils. The same is true of chemistry and physics, those studies more strictly physical, the one dealing with atoms and the other with their combinations, the molecules. These studies may follow those already named. Astronomy should follow physics from the nature of the subjects rather than from the methods of text-books or teachers. Hygiene and the associated form and function of organs should be taught early and constantly; but anatomy and physiology, with the care of the organs, can most profitably be pursued after some practice in observation and reasoning. The broader and deeper problems of physiography or physical geography—the introduction of general geology—bring together the facts and observations of botany, zoology, chemistry, physics and astronomy in their terrestrial relations.

After all, it is not so much *what* as *how*. If the material and the skill requisite for a given study laid down in the course be wanting, don't touch it; give the time to something else. Training more than information is the thing aimed at. In these latter days it is no disgrace to say I don't know; but in this vigorous and growing Northwest it is something of a disgrace to fail.

And right here let us call attention to drawing. Drawing is to all matters of construction, in the widest sense of that word, what writing is to the lawyer or the physician. The mechanic must be able to draw or be content ever to take a subordinate place. In all mechanical pursuits the pencil goes before the hand. The architect, the engineer and the designer, by their skill with the pencil, express the most complex ideas without uttering a word. With his pencil the student aids his memory, trains his eye, makes accurate his comparisons, saves time and crowds his mind with suggestions; he should use his pencil everywhere—exercise himself in drawing from the beginning to the end of his course. The teacher who is skillful with pencil or crayon is doubly armed for his work, while the same instrument broadens the field of the scholar and greatly increases his influence.

Drawing trains the hand and the eye; cultivates the taste; makes the man accurate in thought and in deed; and in every intellectual and mechanical way it broadens his realm and enlarges his powers.

These remarks refer rather to the culmination points of the studies named. No subject should be begun and completed in a single term; the longer the time given to it the better, even if the recitations are not daily. Holding a subject in mind, recalling it, "brooding over it," rearranging old facts with new, making new and varied applications, in short, allowing the matter to become a part of himself is a great advantage to the student. Moulding one's self into a habit of thought or action takes time.

Science to be effectively taught in the public schools—this thought deserves the repetition—*must be taught experimentally*, No matter what the particular branch of science may be, systematic, accurate work must be done. Demonstrations must accompany the recitations at every stage, and whenever convenient the pupils themselves should be the demonstrators. Matter with method, and not method at any cost, should be kept ever before the mind.

The plan of division of labor adopted in some schools presents advantages which are apparent with these studies; one person giving his whole time to the sciences makes a workroom of his study, and, if his heart is in his work, he knows where to gather material and acquires marked skill in improvising apparatus and illustrating his themes. No one here can win success who does not give to his duty a good share of his daily life.

If a threefold grouping be given to the elementary studies of our public schools, the sciences would naturally fall between language and mathematics, since they can never take the place of either. Too much time and too careful instruction cannot well be given to the expression of thought. Facility of expression is needful in science work, especially when the pupil is thrown upon his own resources to describe a phenomenon or reason out the steps of a series of experiments. Training in his mother tongue must be pursued without faltering until the pupil can describe with precision the circumstances of the world's life about him.

Again, reasoning from observation, which as has been stated, is the second stage of science work, is the natural stepping stone to reasoning from abstract ideas, the method more usually practiced in teaching algebra and the higher mathematics.

To give the teacher and pupil more direct and specific aid than the foregoing suggestions, outlines have been prepared in botany, chemistry, physiology and physiography. These outlines embody considerable experience and thought and are offered for careful and honest consideration.

I.

THE ELEMENTS OF BOTANY.

In pursuing this study the pupil's attention should be about evenly divided between the three divisions of our best text-books, viz.: structural, physiological, and systematic botany. Ordinarily the first and second divisions should go hand in hand, for the form and structure of the organs studied and the way they grow and perform their functions as parts of a living thing, should be kept together in the mind.

The old method of botany, committing a list of definitions and crowding the memory with a large number of terms describing roots, the outline, margin and venation of leaves, and the various flower clusters, for the sole purpose of enabling the pupil to name a few flowers, is perhaps very ornamental and, in a certain way, useful; but it is hoped that it will no longer continue to be the leading feature of a course in botany. It is only an insufficient and unnatural toilet in which to introduce to the pupil in the most formal manner what might be made a fascinating and instructive friend. That which Professor W. J. Beal calls the New Botany, "is simply giving the thirsty a chance to drink." It consists in giving instruction from specimens rather than from books. A twig, a leaf, a flower or a piece of wood or a root is taken as the topic for a lesson and everything about it must be seen. Let us use the professor's own words:

> Before the first lesson, each pupil is furnished or told where to procure some specimen for study. If it is winter, and flowers or growing plants cannot be had, give each a branch of a tree or shrub; this branch may be two feet long. The examination of these is made during the usual time for preparing lessons, and not while the class is before the teacher. For the first recitation each is to tell what he has discovered. The specimens are not in sight during the recitation. In learning the lesson books are not used; for if they are used no books will contain a quarter of what the pupil may see for himself. If there is time each member of the class is allowed a chance to mention anything not named by the rest. The teacher may suggest a few other points for study. The pupils are not told what they can see for themselves. An effort is made to keep them working after something which they have not yet discovered. If two members disagree on any point, on the next day, after further study, they are requested to bring in all the proofs they can to sustain their different conclusions. For a second lesson the students review the first lesson — report on a branch of a tree of another species which they have studied as before. Now they notice any point of difference or of similarity. In like manner new branches are studied and new comparisons made. For this purpose, naked branches of our species of elms, maples, ashes, oaks, basswood, beech, poplars, willows, walnut, butternut, hawthorns, cherries, and in fact any of our native or exotic trees and shrubs are suitable. A comparison of the branches of any of the evergreens is interesting and profitable. Discoveries very unexpected are almost sure to reward a patient study of these objects. The teacher must not think time is wasted. No real progress is made till the pupils begin to learn to see; and to learn to see, they must keep trying to form the habit, from the very first; and to form the habit they should make the study of specimens the main feature in the course of training. In nearly all important cases, specimens are examined and a need is felt for a name or definition before these are given. The use of

technical names is not avoided, nor are these thrust upon a student. They are learned as they are needed—a few at a time from the teacher or a text-book. Common terms for science are usually too indefinite in meaning to answer a good purpose. The difficulty of learning technical names is often overestimated. The discipline required to learn them is itself worth all it costs to anyone.

After from four to ten lessons on small branches the following points and others, or answers to them, are brought out: Is there any definite proportion of active and dormant buds in any year? Where do branches appear? Is there any agreement in growth, as to length of branch, and the size of the annular ring each year? Is there any similarity of rapid or slow growth of all the limbs on a branch in each year? Is there any certain number of leaves on a year's growth, or any definite proportion between the lengths of internodes? Can the smallest old dormant buds be made to grow? Is there any order as to what buds grow and what remain dormant? How much, and in what years did each limb grow? There are three ways of telling the age of a branch—by the bud rings, stem rings, and color of the bark. The shape, size, color, degree of smoothness and other peculiarities of buds on any branch, and the leaf scars are made out. The arrangement and position of the buds and bud scales are learned. Is there any order in the arrangement of the specks on a branch? Do the specks change as the branch grows older, and if so, how? How many leaves each year were required to build up the branch? How large were the leaves and the amount of surface exposed for a certain branch? Did the amount of growth in any year correspond to the number of leaves on the twigs and the main axis? Does the ring of wood depend on the growth of the main axis? In this connection pupils may take up phyllotaxis by the study of cones, catkins, etc., not forgetting to examine a large number of specimens of one species.

If the teacher wish for specific directions the following scheme for the first and second lessons is commended. It varies but slightly from the foregoing, and can be even better pursued in January than in June:

LESSON I.

BOX ELDER.

I. Kind of plant (herb, shrub, or tree).

II. Describe all its visible parts (without dissection.)

(a) Trunk (shape, size, color, surface, etc., etc., etc).

(b) Branches (shape, size, color, surface, mode of branching, etc., etc., etc).

(c) Twigs (shape, size, color, surface, mode of branching, etc., etc., etc).

(d) Buds (shape, size, color, surface, position of branching, etc., etc., etc).

(e) Fruit (shape, size, color, surface, position of branching, etc., etc., etc).

III. Make careful drawings of *c* *d* and *e*, natural size, and enlarged five to ten times.

LESSON II.

IV. Examine *bark* and *wood* of twigs.

(a) Dissect bark into its parts.
(b) Dissect wood into its parts.
(c) Make a cross section of twig so as to show all its parts.
(d) Make a longitudinal section of twig so as to show all its parts.

V. *Buds.*

(a) Carefully dissect a bud; count, draw and describe the scales.
(b) Make cross sections of buds to show plan.
(c) Make longitudinal sections of buds to show plan.
(Make Drawings.)
(d) Make longitudinal section through a bud and the twig it grows upon to show attachment.

VI. *Fruits.*

(a) Make sections through wing and body of fruit.
(b) Examine contents of fruit.
(c) What is the use of the wing?

The pupils are now ready for a book lesson on buds, branches and phyllotaxis.

A text-book like *Gray's Lessons* is a valuable guide; the student's aim should be to see how far beyond Gray's general statements, the special object of study, some familiar plant, will take him, and the teacher should be his reference book, to be consulted only when observation and experiment and Gray all seem to fail him. When some time has been given to the preliminary work each pupil should be directed in some line of study different from that of any other member of the class. Let one have some beans, another some grains of wheat, another some Indian corn, etc. Let these seeds be planted, part in earth and part between sheets of paper floating upon the surface of water. Daily examinations should be made and all changes carefully noted. In recitation a comparison of notes and display of specimens will bring out the differences in the phenomena of growth. A very instructive thing to observe is the growth of branches and hairs. For instance, let the student propagating the bean, tell at what stage in the growth of the plant he detects the presence of the fine, hooked hairs which cover the more mature plant so thickly, in some varieties at least, as to cause the leaves to cling tightly to one's coat sleeve. A great variety of experiments will suggest themselves to the competent teacher — such as growing one plant in a bright light, its mate in total darkness; one in water, another in earth; one in sand or water with iron in its food; another with no iron either in the soil or in the water furnished (if melted snow or rain water be not accessible, distilled water should be used). But in any series of experiments the teacher must hold watch and control. No time should be frittered away in aimless tests; a slothful or dreamy onlooking may be taken by the indolent pupil for observation. The course suggested is a training for power; lack of application and energy is almost as fatal to the student's future as utter ignorance.

Such a course as is outlined above should be pursued for some weeks, with the thought held constantly in mind that the plant is a living thing, with each part or organ for the special performance of a certain function — an essential of its life and health and perfection. A classification of plants may then be undertaken. This may be pursued with constant reference to what has been studied, for the remainder of the time usually given in a high school course to this study. A fair acquaintance with the key and the use of the manual can soon be made.

When the members of the class have learned how to see, and have acquired the power to see everything about a plant, one of the objects of botany as a disciplinary study is attained. The keen observer has a tremendous advantage over him who passes through life seeing nothing except what is held before his face. The habit of close observation must receive long and patient training before it becomes systematic and natural. As a beginning of this training botany is the best adapted of all the natural sciences. Material for study and illustration either growing or dried is everywhere to be had without expense. And just here let it be impressed that *botany can be begun at any time in the year.* If plants are studied rather than books the fall is the best time in which to begin, all things considered. Should one term only be given to this study, let the time be distributed as follows, by no means omitting the winter term:

Fall term	Once a week.
Winter term	Once or twice.
Spring term	Twice or thrice.

As a guide in the study of classification and the identification of flowering plants the following outline is appended. It is a copy of that used by the Subfreshman class in the State University, and as such it is commended to the attention of the students preparing to enter the Freshman class (scientific course). It will probably be found too technical for an ordinary high school course; still, it can be used in such a course as a guide to systematic observation by omitting what is given in fine type until the class has made some advance in morphology and plant analysis. The names, locality and date are to be filled in *last:*

OUTLINE OF PLANT ANALYSIS.

Order...

Name...

Identified by...

Locality and date ....

GENERAL CHARACTERS.

Axis.

a. Strong or slender.

b. Simple or branched.

c. Exogenous or endogenous.

d. Herb or tree.

Branches and phyllotaxis.

Scales and bracts.

Hairs and glands.

Juice — taste and appearance.

THE ROOT.

a. Its apparent age and probable duration.

b. Is it simple or multiple?

c. Its shape and office.

d. Appearance of the surface.

THE STEM.

a. Is it annual?

b. What is its mode of growth?

c. Is there any unusual form of branch, e. g. runner or rootstock?

d. If so, describe it.

e. What peculiarity of joint or node do you observe?

f. Are supernumerary, adventitious or latent buds present?

g. Has the stem a definite or indefinite annual growth?

THE LEAF.

a. What parts are present?

b. Give arrangement and venation.

c. Describe the trichome structure.

d. Make a diagram showing venation, outline and margin.

e. Make any observations upon the stages of the leaf as it passes from the immature to the mature form.

THE INFLORESCENCE.

a. Is it determinate or indeterminate?

b. What is the flower cluster?

c. State any interesting facts touching the same.

d. Are there bracts on peduncles or pedicels?

e. If bracts are present, do they form an involucre?

What fact of special interest does this plant illustrate?

THE FLOWER.

What parts are present?

Is it regular? Symmetrical?

Give praefloration.

1. Is the CALYX gamosepalous or polysepalous?

a. If gamosepalous, describe its shape, tube and border.

b. If polysepalous, give number and shape of sepals.

2. Is the calyx free, or is it adherent to the ovary?

3. Is the COROLLA gamopetalous or polypetalous?
    - *a.* If gamopetalous, describe its shape.
    - *b.* If polypetalous, give number and shape of petals.
    - *c.* To what is it adnate?
4. How many STAMENS?
    - *a.* Are they distinct or united? If united, state how.
    - *b.* To what are they adnate?
5. ANTHERS.
    - *a.* Of how many cells?
    - *b.* Are the anthers innate, adnate or versatile? Introse or extrose?
    - *c.* Their dehiscence.
6. FILAMENTS.
    - *a.* Shape and relative length.
    - *b.* Note any peculiarity of the connective.
7. PISTIL.
    - *a.* Apocarpous or syncarpous?
    - *d.* Of how many carpels?
    - *c.* Describe stigma and style.
    - *d.* How many cells has the ovary?
    - *e.* Describe the placentation.
8. OVULES.
    - *a.* Number.
    - *b.* Are they horizontal, ascending, erect, pendulous or suspended?
9. FRUIT.
10. SEED.
    - *a.* Describe shape and outer integument.
    - *b.*] Describe the embryo and albumen.
    - *c.*] Are they anatropous, amphitropous, campylotropous or orthotropous?

To carry out successfully the foregoing course the teacher will find three things are essential, to wit: a good pocket magnifying glass in the hand of each pupil, fair preparation on his own part, and *sufficient time for recitation.* If a microscope magnifying 350 diameters and costing about $30 is accessible to the class, far more satisfactory work can be done. Such an instrument is so valuable,—yes, so indispensable,—to good work in physiology, zoology, physics and chemistry, as well as in botany, that no high school should be without one.

The following are a few sample questions for admission to teh Freshman class:

1. Expand the meaning of this statement: "The germinating plantlet feeds on nourishment provided beforehand."
2. What are some of the incidental uses of leaves, what the true office and how are they constructed to fulfill it?
3. Outline the manner in which the stem and leaves have been changed to produce the flower.
4. State clearly and fully the resemblances and differences *as fruit* between the raspberry, blackberry and strawberry.
5. What are the generic differences between *ranunculus rhomboideus* and *anemone nemorosa?*
6. Compare the family characters of the *Rosaceæ* and the *Liliaceæ.*

The text-book recommended is Gray's New Lessons and Manual of Botany.

Gray's School and Field Book, while being the same as the lessons in the first two hundred pages, is not complete enough in the manual. Beginners in plant analysis cannot have too full descriptions of plants at hand.

Wood's Class Book is good. Wood's Botanist and Florist is open to the same objection as Gray's School and Field Book, viz., incomplete descriptions of plants.

Were our high schools provided with compound microscopes a very different method would be suggested, and quite different text-books recommended.

For reference, teachers should certainly consult Professor W. J. Beal's, The New Botany, published by Chas. H. Marot, Philadelphia, at twenty-five cents; also, Bessey's Essentials of Botany and his Botany for High Schools and Colleges, published by Henry Holt & Co.; Sach's Text-book of Botany, English translation; Thome's Botany, translation; De Bary's Comparative

Anatomy of Phanerogams and Ferns, Bower & Scott's translation, Clarendon Press, and many memoirs in scientific periodicals.

II.

THE ELEMENTS OF CHEMISTRY.

The subject of chemistry is very often omitted from the course of study pursued in high schools. The reason usually is that the apparatus necessary for carrying out the course in a satisfactory manner is not at hand, or the difficulties of procuring a sufficient outfit seem insurmountable. A plan can be carried out in most high schools at a comparatively small expense, as will be seen from the following statements and suggestions prepared by Professor James A. Dodge:

The course in chemistry believed to be fairly adapted to the wants of our high schools, is substantially that pursued by the scientific Subfreshmen in the University of Minnesota, during the fall term. The length of time given to this study is thirteen weeks, with five days per week; the amount daily in the class room is one hour. Using the Elementary Manual of Chemistry, by Eliot & Storer, the text is learned to about the one hundred and fiftieth page. Thus the work includes some of the principal compounds of the carbon group.

These exercises comprise, first, the performance by the members of the class of most of the experiments described in the manual, the class meeting in the work room of the chemical laboratory, provided with tables, water, gas, etc.; second, the performance by the professor, in the lecture room, of the more difficult experiments mentioned in the book and of others not there mentioned, together with the presentation of supplementary matter in lecture form or by way of note and comment on the text; third, recitations on the facts, phenomena and theoretical matter thus presented, studied and experimented upon.

It is deemed desirable that, whenever possible, a similar course should be adopted in teaching elementary chemistry to students preparing for the university examinations. In this subject, perhaps more than in any other, students should have an opportunity during their course of study of *seeing the things* whereof the subject treats. If they come to the university without having had such opportunity for ocular demonstration, but are in partial possession of a mere mass of memorized description of substances and phenomena, they will be much less likely to pass the examination, to say nothing of having a very poor practical knowledge of the subject. This work, it is to be remembered, is a part of the work of students who are nominally engaging in a *scientific course* of study.

Most of all to be recommended in the study of chemistry is the plan of enabling students to perform a good part of the experiments themselves. The expenditure necessary for carrying out this plan at a high school of the average number of scholars would be but moderate. In the appendix to the book of Eliot & Storer lists of the chemicals and the apparatus which would be required for each person, or for the class, are given. The chemicals should be obtained in quantities to supply a number of students, or to last through a number of courses, as dealers generally object to putting up quantities so small as many of those specified. The approximate cost of chemicals sufficient to supply ten to fifteen persons for a single course and such quantities as dealers would willingly pack, would be twenty-five dollars, including bottles. The apparatus required for a class of ten,—as large a number as could conveniently experiment in one room in an ordinary high school building,—would cost approximately seventy-five dollars.

The addresses of some of the most reliable dealers in chemicals and apparatus are as follows: Bullock & Crenshaw, No. 528 Arch Street, Philadelphia; J. W. Queen & Co., 924 Chestnut Street, Philadelphia; Richards & Co., 398 Bowery, New York City; E. B. Benjamin, No. 6 Barclay Street, New York City; Eimer & Amend, 205–211 Third Avenue, New York City; G. H. Sargent & Co., 125 State Street, Chicago. These firms will usually send catalogues to parties requesting them.

If it be found impracticable to follow the plan of study in chemistry just described, the teacher should himself be provided with a fair outfit of apparatus and chemicals for showing the principal experiments before the classes. Such outfits would be in the main like those just mentioned, but smaller. Fifty to sixty dollars would enable one to procure a reasonably good stock for a course in elementary chemistry. Twenty-five to fifty per cent of the stock would be used up each year. Many pieces of apparatus may be improvised from very common articles, such as bottles, jars, cups, plates, pens, tobacco pipes. Yet it is better not to be too much straitened in this respect, as it will usually be at the cost of time and frequently at the cost of success. In any case the use and care of the apparatus will undeniably require the expenditure of considerable time on the part of the teacher, but this expenditure makes all the difference between a dry study and an interesting one.

In teaching chemistry with one or other of the text-books in common use an endeavor should always be made to bring into prominence the *practical* bearings of the facts and principles learned, to draw the attention of students to some of the common applications of chemistry, asking or giving an explanation, wherever possible, for the every day phenomena which are dependent on chemical action, and, in short, exciting an interest in the "chemistry of common life." To illustrate, many things connected with the production and properties of carbonic acid gas are things of familiar experience and of real importance. Now a number of interesting experiments in connection with this gas may be performed with very simple and inexpensive apparatus and materials. Such an experiment is that of showing the production of carbonic acid gas by the fermentation of a quantity of molasses and water and yeast, by filling a four-ounce, wide-mouthed bottle with this mixture, placing a slip of glass or a card over it, inverting the bottle in a saucer partly filled with water, and letting it stand for half a day or so in a warm place; then decanting some of the gas which has accumulated in the bottle into a smaller, clean bottle, in a pail or pan of water and testing the two portions of gas thus obtained, the one with lime water and the other with a lighted stick. Another experiment is the preparation of carbonic acid gas from baking powder and warm water, these materials being placed in a bottle, inclined in such a manner as to deliver the gas into a second bottle, displacing the air. By way of supplement to this we may take the liquid that contains the soluble matters left from the baking powder and, after filtering it or allowing it to become clear by standing, transfer it to a cup and let it evaporate in a warm place until crystals of Rochelle salt form, thus showing what baking powder leaves in bread made with the use of it. Again, we may try that beautiful experiment performed by Dr. Priestley in the last century, showing the decomposition of carbonic acid gas and the setting free of oxygen by the green leaves of plants. It is quite simple. Fill a quart or a two-quart glass jar with water which has been charged with carbonic acid gas by running a stream of the gas through it for fifteen or twenty minutes, then place two or three vigorous, leafy twigs in the water, have the jar filled up with water, cover it, invert it in a saucer or pan of water, and expose it to the direct sunlight for a day or two. The bubbles of oxygen that form and collect in the jar can be transferred by decantation in a pail of water to a small bottle and there tested. One can easily get oxygen enough in this way to inflame a glowing stick. And here we may remind ourselves of the additional interest that may be given to the subject by occasional references to the history of chemical investigations and discoveries, to the lives of famous chemists like Priestley and Lavoisier, Davy and Faraday.

The character of the examination questions, placed before the students at the end of the term's work, and before such students as pursue a course in elementary chemistry outside the university, with a view to admission to the Freshman year scientific course, may be seen from the following:

I. Describe a convenient method of preparing *oxygen*, mentioning the parts of the apparatus used, as well as the material. Write the equation for the same.

II. (a) Describe the preparation of *nitric acid.* (The answer should not be too brief, but should give some details.) Write the equation.

(b) What is N_2O? Describe its preparation and its properties.

III. Describe the preparation of *chloride of lime.* What use or uses has this substance?

IV. (a) Name a convenient method of preparing and collecting CO_2 for experimental purposes. Write the equation.

(b) Mention three (3) other ways in which CO_2 is or may be produced.

V. Give the particulars about the dimorphism of sulphur, stating how it may be illustrated experimentally.

VI. Give one scientific and one popular name for each of the following substances: As_2O_3, NH_4Cl, KNO_3, PH_3, $HNaCO_3$ Fe_2O_3, $CaCO_3$.

As text-books in elementary chemistry the following are preferred. The preference is in the order named:

Eliot & Storer's Elementary Manual of Chemistry, published by Ivison, Blackmun, Taylor & Co., New York.

Avery's Elements of Chemistry, published by Sheldon & Co., New York.

Norton's Elements of Chemistry, published by Van Antwerp, Bragg & Co., Cincinnati.

For reference the teacher needs at least one standard manual at hand. There are several excellent ones; all are rather expensive. The best, if the teacher can afford it, is Roscoe & Schorlemmer's Treatise on Chemistry, published by D. Appleton & Co. at $21.

PHYSIOLOGY.

The location of the bones, the name of the muscles, the characteristics of the various tissues can be learned by the pupil with only a book before him; many questions may be answered by one who knows but little of physiology, but no thorough way of teaching physiology without dissections is yet known. Ocular demonstrations are impressive, and can be made in any school by teachers of even ordinary skill in manipulation, if the time be taken and patience be exercised. Any mammal will serve well for purposes of illustration, and for some lessons a frog or a fish is excellent. A dog or a cat can at nearly all times be secured, or almost any part needed can be procured by arrangement at the meat market.

Only few instruments are necessary for a satisfactory series of experiments in elementary physiology. A microscope, cost $30 to $35; case of dissecting instruments, $2.50; a syringe for injecting blood vessels, $1; chloroform and reagents, $1. The microscope is equally useful in courses in botany and zoology. Every high school ought to have, in addition to those essentials, a mounted skeleton and a collection of microscopic sections of various tissues and organs of the human body, or they may be of the dog, cat, etc. A carefully selected series of slides, even if it be not large, would give the student an idea of how the tissues and organs are made up of cells variously modified, such as no other aid save careful dissection could give.

The term *physiology*, strictly speaking, comprises only one of several aspects from which the human body may be considered. It deals with the body as an organism accomplishing certain actions,—the different parts presenting different properties, undergoing different movements and subserving different uses. In short *physiology* deals with *functions*.

Anatomy properly precedes physiology, since it treats of the structure of the body, the form of the various parts constituting the whole—the organism. It details the mode of growth of these parts, and their structural relations.

Hygiene should follow these two divisions named, since it is an application of the rules of health and preservation to all the parts in detail as well as to the body as a whole. Health, it should be taught, is the essential foundation for all the activities of after life. It must be grounded in good and regular habits, a sturdy principle and a thorough physical development. These fundamentals must be set forth repeatedly and patiently by every teacher. The text-book, the object lesson, and the lecture are not sufficient,— constant example is necessary.

The relations of health and disease should be pointed out. The conditions tending to produce derangements of the bodily organs; how diseases progress; how they are checked; the relations of our personal habits to disease as well as to health; the influence of external surroundings—the air, rain and snow, high land and low land, prairie and woodland,—to our bodily conditions, whether in health or disease, should be clearly set forth. Our schools can in these and other ways do much to aid nature in a healthy development of the human body through systematic culture. And as the work advances both teacher and and pupils will be surprised to see how much may be made out of some very simple every-day topics. Take the following:

Which order of levers is illustrated by nodding the head?

Which order of levers is illustrated by standing on tiptoe?

Which order of levers is illustrated by lifting a book, without changing the position of the elbow?

What are the effects of different kinds of diet upon the muscles? Upon the nerves?

What are the mechanical differences between walking and running?

What are the limits of *judicious* exercise?

Outline the physical effects of starvation.

How much blood in an average human body?

Draw a diagram of the chest, giving the proportional size and exact position of the heart.

What is taking cold?

How much air do we breathe?

When ought persons to bathe? What are the effects of bathing upon the system?

Take two pieces of bone, each two or three inches long, immerse one in dilute chlorhydric acid and boil the other in water. After noting the results, change the experiment by boiling the first in water and immersing the second in the dilute acid. Again note results.

In the course called Physiology, closer and more systematic work is necessary than is indicated by the foregoing paragraph; these three divisions, at least, viz., anatomy, physiology and hygiene should be taken up. To illustrate, use the study of the ear. A plan of study, with a good text-book to name the parts and the head of a cat for a subject, can be laid out something like the following:

A. I. The Outer Ear—the Concha.
  1. Observe the form and structure.
    a. Describe the form in words;
    b. Make sections and study the cartilage, the muscles, the skin and the fine hairs.
  2. Note the shape, size, and direction of that prolongation of the skin forming the passage leading from the outer ear to the tympanic membrane, the "drum," with the wax glands along its walls.
  3. The drum of the ear should be examined; its circular form, its oblique position, its dense fibrous tissue with cells radiating from the centre, all should be noted.

II. The Middle Ear.
  1. The bony character of its walls; its two openings; the oval and the round foramen, into the labyrinth and the opening of the eustachian tube.
  2. The chain of these small bones, the *hammer*, *anvil* and *stirrup;* the form and position of each, with the attachments of the ligaments holding them in their suspended position; the contact of the chain with the drum of the ear and with the oval foramen.

    (A fourth bone frequent in lower animals, the *os orbiculare*, is obsolete in the adult human ear, appearing only as a process on one limb of the incus.)

III. The Internal Ear—the Labyrinth.
  1. Note its form, size and surroundings; the structural relations of its three parts, the vestibule, the semi-circular canals and the cochlea:

the membraneous labyrinth within the bony and its contents.

The nerve fibres whose termini are located in this internal membraneous labyrinth, are the organs taking up the vibrations moving around us and converting them into sensations,—add them to our stock of knowledge of the external world.

B. I. The Nature of Sound

as notes and noises; what is meant by loudness, pitch and quality of sound; in what the training of the ear consists; what the differences are between the trained and the untrained ear; why notes of a single instrument in an orchestra can be selected and followed.

II. The Functions

of the outer ear and of the wax gland; the tympanic membrane; the "auditory ossicles;" the eustachian tube; the foramina, etc.

So with the cochlea, the vestibule and the semi-circular canal.

Try to make clear something of the character of our auditory perceptions,—whether sounds are located within or without the auditory apparatus, how distance and direction of sounds may be judged and what circumstances tend to make at times our judgments grossly wrong.

C. How to train the ear; how to care for it and how to use it should be impressed.

Such a course in physiology perseveringly followed will enable the student to enter the university with more than a "passing" mark at such an examination as is indicated by the following questions selected mostly from the sets used in the entrance examinations during the past three years:

1. Point out the chief characteristics of the human skeleton. Describe the structure of a joint.
2. How is the temperature of the body maintained and regulated?
3. Classify physiologically the consonants used in English.

4. Of what does a single cell consist? Illustrate from any tissue of the body.
5. Of what acts does respiration consist? State the objects of respiration.
6. Name the parts of the ear and describe how sounds are heard.
7. What are the functions of the sympathetic system of nerves? Locate this system.
8. Name some of the regulations to be observed in cities to protect the health of the citizens.

While preparing themselves for their class room teachers may propound to themselves questions like the following and arrange as complete answers as possible as an exercise in mental discipline, and for making more accurate and efficient their work; also follow out any line of study they may suggest:

1. Define a "food." Classify the chief food-stuffs. Name the leading alimentary principles in beef, bread, milk, rice and maize.
2. What is muscle? What are the mechanical relations of the muscular system to the skeleton?

Touching the choice of a text book in physiology, or in any other branch of study as well, this much may be said: Select the works of men of established reputation who are recognized as authorities in the department of research they represent, and not the agglomerations of mere book makers.

The Human Body—Briefer Course—by Professor H. Newell Martin, Johns Hopkins University, published by Henry Holt & Co., New York, is the latest and most scientific outline of physiology now in print.

Cutter's Second Book of Physiology and Huxley and Youmans' Physiology are good; many more by different authors are in use in various schools.*

As works for general reference, the following may be mentioned as exceptionally good:

Treatise on Human Physiology, Dalton; Philadelphia, Henry C. Lea, 1875.

A Text-book of Physiology, Dr. M. Foster; London and New

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* Since the MS for this paper was prepared for the press several text-books of Physiology have appeared receiving high commendation from reviewers; they have not been examined by the writer.

York, MacMillan & Co., 1880. There is an American edition of this work edited by Dr. Reichert which contains additional matter of value to teachers. It is published by Henry C. Lea's Son, Philadelphia, 1880.

The Human Body, H. Newell Martin, New York, Henry Holt & Co., 1881.

And for special reference the following:

Practical Physiology, Foster and Langley; London and New York, MacMillan & Co., 1878.

Practical Biology, Huxley and Martin; London and New York, MacMillan & Co., 1879.

The Cat, St. George Mivart; New York, Charles Scribner's Sons, 1881.

Anatomical Technology, Wilder and Sage; New York and Chicago, A. S. Barnes & Co, 1882.

A series of guides for dissection entitled, A Handbook for Vertebrate Dissection, prepared by Martin and Miall, Johns Hopkins University, and published by MacMillan & Co. The following parts are now issued:

I. How to Dissect a Chelonian.
II. How to Dissect a Bird.
III. How to Dissect a Rodent.

With many valuable articles upon special topics in the various scientific periodicals of England and the United States.

THE ELEMENTS OF PHYSICAL GEOGRAPHY.

There are two places in a school curriculum where a course in physical geography can naturally be taught. First, at the very beginning of a course in the natural and physical sciences, where it may be regarded as a natural introduction to the teaching of these subjects; and, secondly, at the close of such a course, when, applying all the branches which have been pursued, it can be made the introduction of geology.

In the former case "the common knowledge and expererience of the pupils" must be taken as the ground work and the course consist in a careful training in the habits of constant observation and a systematic study of the many phenomena of the air, the water and the earth, which are ever transpiring around them. This is science, and it takes a consummate master to lead children through this their first field without many a trip and stumble. A "cold wave," a tornado, a shower, the outline of a bluff, the cutting of a gorge, the extent of a prairie, or the distribution of timber trees, will prove a puzzle to many an enthusiastic and thoughtful boy; these and other phenomena should be seized by the teacher and woven into his daily work.

In the latter case, when physics and chemistry, botany and geology have been studied, a closer and more analytical method may be pursued. Many questions whose solution hinges on the higher and more abstruse applications of such branches of learning as have been mentioned, can be considered. For instance, the chemical composition of water can be determined, the nature of its solvent power investigated, and the reasons for hills and valleys and the phenomena of lakes and oceans can be explained.

A good text-book is an admirable guide; yet by no means should it be slavishly followed. Around every school house are peculiar landscape features associated with different soils and characteristic types of vegetable and animal life. Surrounding these are certain climatic conditions embodied in the water, air and temperature, and upon which they depend. To understand the former the latter should first be studied. If the teacher begin the course in this science by calling the attention of his pupils to the physical features of their own neighborhood and State and extend the study through present fact and phenomenon to other parts of the globe, he will follow out the natural method of treating this subject.

More systematic consideration of the subject matter can be secured if the topics be grouped under the following heads, which comprise the essentials of physical geography:

I. THE AIR.
II. THE WATER.
III. THE LAND.
IV. THE FIGURE OF THE EARTH; ITS RELATION TO THE SOLAR SYSTEM.

Under the first division the outermost envelope of our earth is studied. The composition of the air can be understood; so too its height, its pressure, its temperature; the water and foreign substances it contains and its myriad movements. Here upon the boundary line of the first and second divisions an outline of meteorology belongs. "The science that treats of the earth's atmosphere and its relations to all the various features of the weather," considers the moisture of the air as well as its temperature, its pressure and its movements. This subject can be made of great practical as well as disciplinary value in all our schools. Among all the questions sure to arise during the study of this topic touching the work and the usefulness of the weather service, that concerning the causes, phenomena and effects of tornadoes will arouse intensest interest.

The moisture in the air naturally brings up for discussion the facts and phenomena of evaporation, vapor, clouds and rainfall; and as dependent upon them, dew, hoar frost, hail and snow. Then we come to springs, the sources of all our permanent streams; underground waters and what is necessary for the formation of mineral springs and geysers; brooks and rivers and the movement of terrestrial waters towards the sea; the phenomena of glaciers with their causes and the conditions of their distribution over the earth. Lakes, too, have an especial interest for the pupils of our Minnesota schools from the great number scattered over the State and the peculiar type of lake (glacial) which they represent. The ocean, as the great reservoir towards which the waters tend and in which they are lost, receives last attention.

Its grand function as the equalizer and distributor of heat over the globe, merits thoughtful study as one of the directive forces of modern civilization.

The third division is also comprehensive. Only two or three points need here be alluded to; one the moulding of the contour features of continental areas through the erosive power of rivers and smaller streams, especially in mountainous countries. Another is the igneous agencies, which have been at work through all geological ages, and the folding of the rock strata into continuous elevations and depressions, reaching continents in length.

Finally, after learning something of our earth as itself and to some extent systematizing our knowledge, we can begin to contemplate it as a member of the solar system. Its figure, *i. e.* its spheroidal form, can be studied as a basis for map drawing and mention can be made of the various proofs at hand for showing the shape of our globe; for explaining the causes of winds and ocean currents; the constitution of the sun; the sun as the centre of gravity, and finally the influence of all these forces upon plant and animal life, and upon all the surroundings of our civilization.

To give the teacher more specific guidance in carrying out the foregoing plan, a syllabus is offered comprising the first and a part of the second divisions. If the course be carried out on the plan proposed, the term given to physical geography will be found lacking in many statements pertaining to distant parts of the earth and replete with facts gathered up from the every day experience of teacher and pupils; it will be a term devoted to the physiography* of Minnesota.

I. THE ATMOSPHERE.—Its constitution and its phenomena.

Composition of the air.

Properties of its constituents.

Oxygen, its quantity and uses; experiments proving its presence and its effects (a) in combustion; (b) upon life.

Carbonic acid; its quantity and effect upon life (the amount of CO_2 in the air on Ben Nevis is 327 parts per million; in Boston school rooms, 1,482 parts per million; in a Cornish mine, one determination gave 25,000 parts per million); how much CO_2 an animal can endure; a layer of coal 3 inches thick, or of limestone 15 inches thick, spread over the land, would contain enough to destroy every living warm blooded animal. Consider the effect of varying proportions of this constituent upon the growth and permanent vigor of animal and plant life. The sources of carbonic acid.

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* The terms *physical geography* and *physiography* are used in this paper as synonymous.

Watery vapor — its quantity — why varying, how to detect it; relation of atmosphere and temperature. Saturate the air in a room 70x50x15 feet; it would contain at freezing point, 15 pounds of water; at the living temperature, *i. e.*, 68° Fahr., 57 pounds; at blood heat, 141 pounds.

Minnesota air is called dry; what is its influence upon invalids and upon the work and the vitality of healthy laborers and business men? The principle of the dry and wet bulb thermometer? Let the experiment be tried to prove whether there are solid particles floating in the air, by collecting and evaporating rain water, and examining the residue, if there be one, under the school microscope. Test the same also for any acid properties.

The height, pressure and density of the atmosphere.

The same at different altitudes, as indicated by barometric pressure, temperature for boiling water in an open vessel, breathing, etc. Illustrate the pressure of the air. With a glass tube 30 inches or more long, and some mercury, show the construction of the *barometer*. Keep the tube in position for some days, to watch the height of the mercury in the tube.

The temperature of the atmosphere.

How measured; maximum and minimum thermometers. Average temperature at Minneapolis for last 12 years, 43.22°. Monthly averages: January, 8.72°; February, 16.25°; March, 26.28°; April, 43.59°; May, 60.35; June, 66.50°; July, 71.29°; August, 69,61°; September, 57.96°; October, 46.04°; November, 26.93°; December, 14.12°; with daily variations are shown. Temperature varies 1° for 350 feet altitude; and from south to north, 1° for each 32 miles. Lakes modify temperature.

Movements of the atmosphere.

Breezes, winds and tornadoes; how rate is measured; construction of the anemometer. Causes of air currents; what are our prevailing winds? why they change suddenly.

Tornadoes: zone of their occurrence; in what months they are most prevalent; what are the forces in these storms;

why rain accompanies them; means of protection proposed. What are the moist winds of Minnesota?

Here, upon the boundary between the first and second divisions, study meteorology and climatology in their relations to Minnesota industries and people. Combine atmospheric pressure, temperature and movement with clouds and rainfall, hail and snow. Our shallow lakes change from 39° to 75° in temperature during spring and mid summer; each cubic foot of water stores up heat enough to lift 625 tons one foot, if it were changed to power. The amount of heat received each year by Minnesota from the sun is enough to melt a layer of ice 72 feet thick over its whole surface. Consider the relations of moisture to temperature, and the effect of cultivation of the soil upon rainfall and the average annual temperature; causes of our atmospheric conditions; what rainfall indicates to the farmer; how rainstorms are sectional; laws of storms and how to read them; and the slow, never-ending effect of these several forces upon animal and vegetable life, and upon the face of the country.

II. THE WATER.

Its composition, phenomena and effects.

Peculiarities and properties of water.

Chemical composition of rain, river and spring water; causes of variation.

Clouds and rain should be considered in their meteorological relations and their conditions carefully studied. The function of clouds is to supply the earth's surface with moisture; they transport the product of evaporation and distribute it over the earth; they act as condensers, and as such, perform a never-ending work. The conditions of rainfall vary; in some places there is no rain as in parts of Peru; in the Khasi Hills, India, 559 inches per annum; in Minnesota, 28.42 inches; at New Orleans, 60 inches. Consider here the phenomena of dew and frost.

Springs are fed through evaporation and rainfall.

Evaporation is a constant process; on the coldest day it is simply slackened, not stopped. In some seasons, *e. g.*, 1883, our snow disappears without greatly swelling our streams. Winds affect evaporation. Rainfall is less constant, and depends upon temperature and winds.

Springs are the sources of all our permanent streams.

Waters from rain and snow percolate through soil and rock strata, filtered of mechanical impurities and loaded with mineral matters in solution. Hence, medicinal springs of all kinds, depending on materials taken up; hot springs, if the strata be heated, and hard waters of every type. Note Minneapolis, Owatonna, Austin, New Ulm, Granite Falls, St. Croix Falls, Wis., Minnesota City, and many other places.

Many questions will be suggested here touching the curative properties of mineral waters, and the domestic uses of spring, well and rain water; a consideration of agricultural and other economic questions in their relation to evaporation and rainfall, will yield most profitable results.

Streams and rivers.

The water falling upon the land as rain and snow, is disposed of in three ways:

1. It evaporates, forming the humidity of the air, and condenses into clouds and rain.
2. It is absorbed into the rocks and soil, forming subterranean streams, or oozing imperceptibly to the surface.
3. It forms rills, brooks, creeks and rivers.

All streams can best be contemplated in the light of their effects. Every shower loosens and removes particles of soil, etc.; this removal is denudation. The Mississippi River removes one foot of material over the whole area of its valley every 6,000 years. Streamlets are formed, which cut into the soft earth, and even through the firm sod of the prairie; muddy rills result which grow larger and cut deeper as they flow; these streams reach the larger and slower water courses with much sediment which they sooner or later deposit. The finest sediment settles last and in the sea, where are laid down the beds of future shales and slates.

Channels are worn through the massive and sedimentary rocks, becoming larger and larger with length of time and size of stream; this is erosion. The wearing agent is the *detritus*, which the water carries; pure water has no eroding effect upon compact rocks; neither have substances held in solution.

Study the gorge of any stream, but especially that of Temperance, Vermillion, Rolling Stone or Root river; the Minnesota and its tributaries; the Mississippi from Minneapolis to the Iowa line; the St. Croix to Taylors Falls; the St. Louis.

Consider here icebergs and glaciers—their condition, movements and effects. The drift, which almost universally covers the State and constitutes so important a chapter in its geology, had its origin in the so-called glacial period, a space of geological time during which broad ice fields were spread out over the Northern States of the Union and the British possessions. This ice field moved southward, tearing up, grinding and transporting the underlying rocks in its course until vast quantities of rock material, in all stages of comminution, were thoroughly mixed and with some uniformity distributed over not only Minnesota, but all other states east of Dakota and north of the Missouri and Ohio rivers.

Lakes—their formation and uses.

Estimated number in Minnesota, 10,000. There are three distinct types.

1. Enlargement of river channels, as Lakes Pepin and St. Croix, where the channel is dammed by the silt of an inflowing stream and the water made to set back.
2. Rock basins filled with water, formed by the erosion or the interruption of a geological formation; *e. g.*, many of the lakes in the northeastern portion of the State. The shores are rocky, at least upon one side.
3. The glacial lakes, with gravelly shores; occasionally a stretch of boulders is seen, or the lake extends into a broad marsh or a long slough. Minnesota lakes are chiefly of this class. A great number may be found within a belt of fifty miles wide, extending from Minneapolis northwest to Becker County and thence northeast to the Canadian boundary. These lakes are mostly small, though Red Lake covers 340,000 acres.

Lakes have many uses, climatal and economic. Minnesota lakes are filling up.

In any of our lakes of considereble size many phenomena, as absorption of heat, freezing, action of waves and ice upon the shores, transport of floating objects, effect in preventing frosts, absence of under ice, etc., may be observed.

The foregoing is sufficient to show how the subject can be treated upon the experimental plan. The question is not whether we have read of everything beyond us, but whether we have seen and meditated upon what is always within our reach. There is not a chapter nor hardly a paragraph pertaining to the essentials of the subject, save perhaps that treating of the sun, which cannot be illustrated from the experience or the knowledge of any class. Even earthquake and volcanic phenomena can be brought home through newspaper accounts, as of earthquakes during the past year in Ohio, New York, New England and Spain, and through studying the igneous rocks covering hundreds of square miles in the northeastern portion of the State, and breaking through the granite rocks and slates of the central counties of the State, and the gneisses of the Minnesota Valley, as dikes of greater or less width, and the fine exposures of these filled-up fissures at Taylors Falls, Thomson, and in and around Duluth.

The character of the preparation expected for admission to the university is indicated by the following sample questions:

1. Draw a map of Minnesota, representing upon it the main surface features, drainage areas, forest tracts, etc., of the State.
2. What is understood by the term "annual rainfall," and what causes the difference in rainfall between Washington Territory and Minnesota?
3. How are lakes formed? What causes the saltness of some lakes?
4. What causes determine the oceanic currents? Outline the course and state the climatic uses of the Japan current.
5. What is a tornado and what conditions combine to produce it?
6. What relations do you see between the climatic conditions and agricultural productions of Minnesota?
7. What conditions combine to modify the physical and mental traits of the five races of men? Outline an illustration.

As text-books those of Maury and Guyot were prepared by masters of the subject. For that reason among others they are preferred. Those of Houston, Fitch, Cornell, Warren and one or two others are extensively used.

For reference two small works, especially good, and within the reach of every teacher, are:

Physiography — An introduction to the study of nature. T. H. Huxley, London and New York, Macmillan & Co., 1880.

Elementary Lessons in Physical Geography; Archibald Geikie, London and New York, Macmillan & Co., 1884.

Other more costly and comprehensive works are:

Six Lectures on Physical Geography; Rev. Samuel Haughton, Dublin, University Press Series, 1880.

Physical Geography of the Globe; Sir J. F. Herschel, Edinburgh, Adam and Charles Black.

Articles upon special topics in any good Encyclopedia are among the best and most accessible authorities.

For Minnesota, reference may be made to the first volume of the final report Geological and Natural History Survey, 1884.

The various publications of the State Board of Immigration.

Report of the Minnesota State Horticultural Society for 1884.

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